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The Railway Wage Dispute

THE extent of the efforts which had been made earlier this week not only by the Minister of Labour, Sir Walter Monckton, as mediator, but also by the British Transport Commission to avert the railway strike called for next Monday by the National Union of Railwaymen over railway wages, is shown by the account on another page of the steps taken as we went to press. The Minister, as in previous disputes, held discussions with the representatives of the Commission and of the three railway unions and offered his own services and that of his Ministry as mediator. The Commission last week expressed its willingness subject to acceptance by the unions of the Railway Staff National Tribunal award of an increase in pay of 4s. a week for railway salaried and conciliation staff, to examine as soon as possible, with the unions, the whole wage and salary structure of railway employees with a view to correcting any anomalies and to increasing incentive where desirable. Like the Railway Executive in the wages dispute early in 1951, the Commission expressed its wish to include in the discussions with the unions the question of increasing the efficiency of the railway organisation " by all other appropriate means " and not only by adjustment of wages. One hopeful sign has been the willingness of the Associated Society of Locomotive Engineers & Firemen and the Transport Salaried Staffs' Association to fall in with the Commission proposals. These unions unfortunately have membership much inferior in numbers to that of the N.U.R., though it was still hoped that their more moderate attitude might prevail with the larger union; the latter, apart from the major issues arising out of the dispute which affect transport in this country, presumably has taken account of public opinion, which is bound to be very hostile to a strike in Christmas week, whatever view certain elements might take of the merits of the unions' case. Although the wage demands date back many weeks, the dispute has come as one of the first tasks with which Sir Brian Robertson has had to deal as Chairman of the Commission, on which the duty of handling the case from the employer's side falls since the abolition of the Railway Executive last October.

East African Rates to Increase

ON January 1 all freight rates of the East African Railways are increased by 20 per cent, in accordance with a decision of the East African Transport Advisory Council on December 11. The increase, forecast by the then General Manager in his report for 1952, is necessary to meet higher costs resulting from rises in wages and materials and the high loan and depreciation charges on capital development. Mounting costs on the East African Railways can no longer be absorbed except by raising charges. Since 1939 the cost of most materials and equipment used by the railways has gone up by at least 200 per cent, yet the average level of transport charges has been increased by only 15 per cent. It is a tribute to the resiliency of the system and its sound management and operation that a general increase has been so long deferred. Even so, the new level of rates introduced appears to be, on the whole, lower than in South Africa and Rhodesia. The increases are estimated to bring in £2,135,000 more a year, but this may hardly suffice for an adequate allocation to be made to the betterment fund, the only means by which the Administration can finance capital improvements without recourse to loans, already authorised to a total of nearly £60,000,000 since 1948.

Improving Bombay Suburban Services

A COMMITTEE of officers of the Central and Western Railway of India has been examining proposals to provide cross connections at Dadar, on Bombay Island and in the north of Bombay City, so that electric suburban trains could be run between Bombay Churchgate, terminus of the former B.B.C.I.R. (now Western) suburban service, and Kalyan on the former G.I.P.R. (now Central), and between Bandra on the Western Railway and Victoria Terminus on the Central, though the latter service is now provided by trains over the Harbour Branch of the Central Railway. The constant growth of Bombay, which involves the shifting northward of the centre of gravity of the population, has increased the demand for these facilities. At present the Central and Western main lines run parallel at Dadar, with exchange facilities in the form of a somewhat lengthy footbridge joining the stations, and most main-line trains of both railways stop there, especially to set down in the up (towards Bombay) direction. Both main lines at this point are four track, so that though the ground is flat, provision of flying junctions would be difficult and expensive.

Overseas Railways Reviewed

THE recent progress and future possibilities of railways in British Commonwealth and of British-owned systems in other countries and those which follow British practice in operating and in design of equipment are

reviewed in our publication *Overseas Railways, 1953*; a brief notice appears elsewhere in this issue. The series of articles on their own systems by the heads of administrations or other senior officers shows that managements are not deterred from bold policies of capital improvements by the difficulties which railways are facing in widely different parts of the world, including the less developed countries. Despite mounting costs which tend to swallow up what are often record traffics and revenues, large-scale schemes affecting many spheres of railway activity and involving heavy expenditure are being worked out or implemented. They include new construction, as in East, Central, and West Africa, the Sudan and India; C.T.C., as in Rhodesia, electrification and dieselisation and additions to electric and diesel motive power in a wide variety of countries, and a number of extensive steam locomotive procurement programmes, from the last of which it is clear that demands for this type of motive power will continue for many years to come.

The Road Improvement Programme

THE Minister of Transport & Civil Aviation, Mr. Alan Lennox-Boyd, last week announced in the House of Commons the Government plans for expenditure on roads. Wartime restrictions, followed by the severe economies in capital investment which the present Government and its predecessors have imposed, have brought the annual payments from the Road Fund for expenditure on road improvements down to about £5 million a year. Before the war, the comparable expenditure figure was some £10,000,000, and since then costs have trebled. The present proposals are to approve, in the next three financial years, works involving a total Government expenditure of about £50,000,000. Time needed for preparatory work and land acquisition will cause actual physical work in the first two years to be limited; total expenditure should rise to nearly £12 million in 1956-57, and be stabilised at between £14 and £15 million in 1957-58 and succeeding years. Although local authority expenditure will be additional, the grand totals of money, bearing in mind present-day costs, justify the reaction of the road industry that the new Government proposals represent a step in the right direction, but are seriously inadequate to meet the industrial needs of the country.

Indian Traffics and Rolling Stock

THE Government of India is fortunate in that its railways are estimated to carry in a normal year 80 per cent of all the country's goods traffic and 70 per cent of all the passengers in inter-regional traffic. In the year ended March 31 last, they are reported to have carried 1,193,000,000 passengers and also 97,700,000 tons of goods over an aggregate distance of 28,550,000,000 miles, a distance no less than 40 per cent larger than the corresponding one in 1948-49, the first complete year after Partition. This is the more remarkable because the numbers of both locomotives and wagons in service were practically equal in these two years. Moreover nearly 24 per cent of the wagon stock is now stated to be over-age, but it has to be kept patched up and in service to meet increasing traffic demands. Meanwhile the entire wagon-building output in the country is earmarked for Indian railways, and every effort is being made to obtain new wagons from abroad; it is expected that some 54,000 from all sources will have been delivered by March, 1956, but this number is more than 14 per cent short of requirements. About 32 per cent of the 8,200 locomotives in service on the Indian railways recently were considered to be over age, and, as we know, orders for replacements are being placed in several foreign countries.

Standard Coaching Stock for British Railways

CHARLES ROBERTS & CO. LTD. has completed the first of a contract for 344 third class passenger coaches with baggage and brake compartments for British Railways. The firm has been building mineral and oil tank wagons and brake vans for home and overseas railways for nearly a century, but this is the first time that it has undertaken the building of main-line passenger vehicles, although it is already engaged on construction of electric rail coaches for the Blackpool Corporation. To mark the occasion, the company invited representatives of overseas railways and members of the technical press to an inspection of its works at Horbury Junction, near Wakefield, where the visitors saw the construction of oil tank, hopper, mineral, and all-steel covered goods wagons for the Rhodesia Railways, Ceylon Government Railways, National Coal Board, and other railways. Also in course of construction was an order for 9,000 16-ton standard type mineral wagons, which are being turned out at a rate of 2,000 a year. The passenger coaches now being built for the British Railways are of their standard design and further details of them are given elsewhere in this issue.

Second-Class Corridor Stock for Mozambique

THE Mozambique Railways will shortly take delivery of eight second class corridor type carriages for operating over the Beira system, where they will be used on the Beira-Umtali section. The rolling stock, which is described and illustrated elsewhere in this issue, was designed and built by the Metropolitan-Cammell Carriage & Wagon Co. Ltd. The stock is of all-steel construction and insulation is provided by sprayed Limpet asbestos 1 in. thick down to the waist rail and ½ in. thick below. Floors are of galvanised keystone corrugated steel sheets on which is cemented a layer of slab cork, which is covered with felt $\frac{1}{16}$ in. thick, and overlaid with linoleum. The bogies are of the equalising beam type, with two stage suspension. The first incorporates large spiral springs, while the second incorporates leaf springs of the elliptical type with a swing bolster, the equalising beam is mounted over British Timken roller-bearing axleboxes. The bogies and underframe are of riveted construction, the design of the underframe being such as to avoid the use of truss rods, and provides ample space for the brakegear, electrical equipment, and water storage tanks.

Suspension Transport in the Alps

THE many suspension cableways and chair-lifts which have been multiplying in Alpine regions since the war—though the first cableway was inaugurated in the Tyrol nearly 50 years ago—act largely as feeders to the railways, as so many of them establish direct communication between railways and the high-lying villages. For general traffic purposes the cableway (*seilbahn* or *téléphérique*) is favoured, because the cars can be constructed to be capable of carrying limited amounts of freight besides passengers. Lines of this type have revolutionised the life of many villages which previously could be reached only by laborious climbs up mule tracks; to villages high up the south side of the Rhone valley, for example, there are now five cableways starting from points adjoining stations on the Simplon main line of the Swiss Federal Railways. The passenger capacity of the cars on some of these lines may be as small as 8 to 20 persons, but they fulfil a valuable purpose. In various Alpine districts there are also small privately-operated suspension lines of the same type, which do not figure in the public timetables; often their lower terminals are not manned, and they operate only when passengers present themselves and ring a bell to advise the winding engineman at the upper terminal of the line that they are ready to start. The large number of chairlifts, however, has been built mainly in the interest of tourism and winter sports.

Diesel-Hydraulic Railcar Economies

THE popularity of the recently-introduced diesel-hydraulic railcars of the "RDC" type shows no sign of diminution in the United States. These vehicles are available in three different types, according to whether all-passenger accommodation is required, or passenger seating with baggage space, or passenger, bag-

gage and mail space. They are 85 ft. long, of stainless steel construction, and capable of speeds up to 85 m.p.h. Figures published recently concerning three of these cars on the Boston & Maine Railroad show that in nine months they have run from 75,976 to 124,361 miles each, and at from 2·09 to 2·72 miles per gal, of fuel burned. Fuel oil per mile has ranged in cost from 0·036 to 0·048 cents and lubricating cost from 0·004 to 0·006 cents, while total operating cost, excluding wages, has varied from 0·075 to 0·087 cents per mile, according to the particular duties to which the railcars have been assigned. The economy in operation brought about by the introduction of these three cars alone has been at an annual rate of $476,580, and the additional revenue obtained by the additional service they provide has been $202,164—a total gain that in a single year alone has repaid the investment. On the neighbouring New York, New Haven & Hartford Railroad which serves some densely populated areas of New England certain branch passenger services that had been withdrawn for a number of years through lack of patronage have now been restored on a profitable basis with similar cars.

Travelling Much Too Fast

THE accident at Gollanfield Junction on June 9, 1953, a head-on collision on single line—very rare indeed in Great Britain—was caused, as will be seen from the summary on another page of Colonel D. McMullen's report, by the driver of an unfitted freight train approaching the station, though the distant signal was against him, so fast that even had he braked fully and continued to do so he would have over-run it by an appreciable distance. He failed to do that, however, and misled by the premature clearing of the home signal, although he should have known he might have to cross the other train there, made no real attempt to slow down, ran through the station and dashed into it. The damage suggested a combined speed of 60 to 70 m.p.h. As there have been other cases of excessive speed on the part of unfitted trains Colonel McMullen recommends a general limit for them of 45 m.p.h. The inquiry disclosed confusion among the staff concerning a supposed confliction between Rule 39 (a) and the former L.M.S.R. single line block regulations and also a slight difference between the latter and those applying on former L.N.E.R. lines. It is, of course, most desirable to have standard rules in such matters, now we have a national railway system, and to have everything worded so that there is no possibility of doubt as to what is meant. It is particularly surprising to observe how, after all the long experience which has been gained in framing our rules and regulations, difficulty still occasionally arises in the proper interpretation of them.

Paradise Lost

WHEN Tamworth took its historic step in banning train spotters, the event caused interest but no sense of awe. The ban recently imposed at Crewe is on a different plane, for it is widely recognised that Crewe Station, in its own way, is a pleasance as desirable as the Garden of Eden, and to be expelled from its platforms is a doom of epic magnitude. British Railways must be admitted to be remarkably tolerant towards those who regard their operations as a form of entertainment. Their show goes on at many stations in circumstances reminiscent of the theatre in the first Elizabethan age, when some of the audience sat on the stage and made personal remarks about the players. Members of the staff show no resentment when the appearance of a locomotive over-familiar to the *habitués* is greeted with cries of "chuck it off the rails!" They are less concerned at what goes on during the acts than at the conduct of some spotters in the intervals. There are too many unruly spotters who employ themselves in damaging the auditorium and getting in the way of the scene-shifters during the periods corresponding to those when their fathers at the play would be trooping obediently into the theatre bar.

C.I.E. £10,500,000 Development Plan

A CAPITAL development plan for new motive power and rolling stock to cost £10,500,000 is to be launched by Coras Iompair Eireann. Details were announced by Mr. T. C. Courtney, Chairman of the Board, at a press conference last week, when the Board's third annual report, covering the year ended March 31 last, was presented. The plan provides for an almost complete changeover from steam to diesel locomotive and railcar traction, by which it is hoped to cut the annual fuel bill of £1,500,000 by £1,000,000. The Government of the Republic has approved in principle of the purchase of diesel locomotives to a cost of £5,000,000 and tenders have been sought for 50 main line diesel locomotives of 1,100-1,400 h.p. and 40 of 550-700 h.p. and 15 shunting diesel locomotives of 250-300 h.p. Mr. Courtney announced that 30 tenders for these had been received from all over the world and it was hoped to place orders within the "next few months." In addition to its two mixed-traffic and five shunting diesel-electrics in service, C.I.E. has already on order twelve 915 h.p. diesel-electric locomotives, and these are in course of construction by the Birmingham Railway Carriage & Wagon Co. Ltd.; Sulzer engines already built are being incorporated.

Very satisfactory service is being given by the 36 railcars in service of the total of the 60 being supplied by A.E.C. Limited. On its diesels alone the Board is saving £3,200 in fuel costs. The qualification in the wording of the announcement of the changeover to diesel traction is explained by the fact that the Board is to build at Inchicore 50 steam locomotives to burn turf or oil. In the next ten years 340 coaches and 3,500 wagons are to be turned out of Inchicore, at a total cost of £5,500,000, additional to the normal year-to-year renewals. It is hoped to save £23,000 a year by closing 17 branches, £15,000 more by closing some little-used stations and another £23,000 by the introduction of improved methods of handling goods.

The development plan will be covered by a new Transport Bill which Mr. Sean Lemass, Minister for Industry & Commerce, will have ready for presentation in the early Spring and is expected to provide a fresh basis for the future working of C.I.E. and dispense in future with the need for State subsidies, which in the last financial year amounted to some £1,470,000. This was less than the loss incurred during the period, which was £1,539,977, excluding interest on Transport Stocks. The undertaking is now working within the £1,500,000 subsidy, however, and Mr. Courtney hopes that this situation will continue until the end of the present financial year.

Road and Rail Fares

ONE of the important general questions considered and analysed by the Thesiger Committee, whose report was discussed in last week's issue, is whether, in view of the great disparity in road and rail fares, it is still in the public interest that the Licensing Authorities should continue to have regard to the co-ordination of road and rail, when exercising their discretion to grant or refuse a road service licence. The Committee feels that any future policy on this matter must take into account factors which cumulatively have been the cause of the present disparity, and which it summarises as follows. Before the war, although railway fares were higher than those of passenger road transport, railway profits were relatively less than those earned by road operators. Consequently, unlike the railways, road operators were able to absorb a substantial proportion of their rising operating costs after the war. Their lower fares attracted increased loadings, which were made even greater by the increased volume of public travel. Another factor of great importance and benefit to the road operator was the restriction of free competition brought about by the licensing system, which, by producing heavier loadings, enabled increases in fares to be kept at a lower level than would otherwise have been necessary.

An important help to the road operator was the statutory obligation on the railways to charge a uniform rate throughout the country. This meant that in many cases

railway fares were not directly related to the operating costs of a particular service, and the more remunerative long-distance runs had to subsidise highly unremunerative branch lines.

If railway fares were more closely related to costs, some of the long-distance rail services, at any rate, might perhaps become highly competitive with road transport in the matter of fares. Now that the Transport Act, 1953, has given the railways greater freedom to adjust their fares to meet competition, the Thesiger Committee feels that it may be advisable to gain some experience of how that freedom is applied in practice before any new policy or emphasis is written into the Act.

The road transport licensing system introduced by the Road Traffic Act, 1930, had, as we pointed out last week, resulted in little or no co-ordination between road and rail in the sense of a planned division of function. It is most unlikely that any such attempt would have proved acceptable, if interpreted in the sense that duplicate rail and road facilities on approximately the same route constituted wasteful competition from which one form of transport should be eliminated.

A factor which has led the Thesiger Committee to the conclusion that the existing provisions of the 1930 Act should not be altered is that they are already flexible enough to allow of any necessary change of policy or emphasis.

As the provisions are, they neither rule out nor give any overriding significance to fares as an element in the co-ordination of road and rail. The Act requires that regard be paid by the Licensing Authorities to the matter of wasteful competition, including the extent to which the needs of the route are already served adequately, with the object of eliminating unnecessary road services. On the other hand, the suitability of the kind of service to the requirements and circumstances of those using it is also relevant.

The provisions of Section 72 (3) of the 1930 Act allow of all relevant circumstances being taken into account by the Licensing Authorities, and, among these, a difference in fares may be one. In practice, this has often proved to be the case. Because the influence that a difference in fares may have on any decision must vary in relation to the other circumstances of the case, the Committee regards the present position as correct. Presumably any exercise by the railways of their greater freedom to adjust fares will have its repercussions when applications for road service licences rely to any substantial extent on a marked difference between road and rail fares.

British Transport Commission Traffic Receipts

THE merchandise and livestock receipts of British Railways for Period 12, the four weeks ended November 29, at £9,075,000 were another record, and an appreciable increase over the preceding year. Coal traffics at £9,037,000 were some of the highest recorded, being exceeded only by those for the second (£9,062,000) and third (£9,121,000) four-week periods of 1953; the increase of nearly 10 per cent over the corresponding figure for last year is the result of the greatly increased output from the mines reflected in the heavy tonnages by rail in the past weeks, besides the 5 per cent increase in rates which had taken place during the 12 months.

Mineral receipts at £3,704,000 were very slightly exceeded by the figure for Period 11. They were however 5·1 per cent up on the corresponding figure for last year; these results reflect the record steel production during this period.

Passenger receipts on British Railways only slightly exceeded those for Period 12 of last year. In the absence of details it is impossible to comment on this figure, except to say that in what is usually a quiet month British Railways seem to have held their own in face of competition from other forms of transport.

During the same four weeks the Commission's provincial and Scottish road passenger undertaking showed receipts with roughly double the amount of increase over last year.

London Transport bus receipts were well above those for the same four weeks of last year, and, at £3,179,000, only slightly less than the £3,187,000 of the preceding period, which was seasonally and otherwise more conducive to travel. London Underground receipts at £1,478,000 compare with £1,485,000 for the preceding four weeks, and are well above the corresponding figure for last year.

—	Four weeks to November 29		Incr. or decr.	Aggregate for 48 weeks		Incr. or decr.
	1953	1952		1953	1952	
	£000	£000		£000	£000	
British Railways—						
Passengers	6,825	6,665	+ 160	106,144	103,045	+ 3,099
Parcels, etc., by passenger train	3,051	2,805	+ 246	35,438	32,949	+ 2,489
Merchandise & livestock	9,075	8,679	+ 396	100,168	98,133	+ 2,035
Minerals	3,704	3,522	+ 182	41,657	38,533	+ 3,124
Coal & coke	9,037	8,224	+ 813	100,202	93,082	+ 7,120
Total British Railways ...	31,692	29,895	+ 1,797	383,609	465,742	+ 17,867
British Railways C. & D. ...	948	858	+ 90	10,745	10,405	+ 340
British Road Services ...	6,500	6,105	+ 395	73,002	70,754	+ 2,248
Road Passenger Transport : Provincial & Scottish ...	3,387	3,215	+ 172	46,408	44,257	+ 2,151
London Transport—						
Railways	1,478	1,409	+ 69	16,695	16,443	+ 252
Buses & Coaches ...	3,179	2,973	+ 206	37,603	36,279	+ 1,324
Trolleybuses & trams ...	732	703	+ 29	8,476	8,770	— 294
Total London Transport ...	5,389	5,085	+ 304	62,774	01,492	+ 1,282
Ships...	602	583	+ 19	10,809	10,910	— 101
Inland Waterways : Carrying	73	71	+ 2	834	832	+ 2
Total from passengers ...	15,763	15,123	+ 640	220,532	214,018	+ 6,514
Total from freight, parcels & mails	32,828	30,689	+ 2,139	367,649	350,374	+ 17,275
TOTAL FROM CARRYING ACTIVITIES ...	48,591	45,812	+ 2,779	588,181	564,392	+ 23,789

Ship receipts at £602,000 were, seasonally, less than for the previous four weeks, but exceeded those for 1952. Nothing can be deduced from this as to passenger travel to and from the Continent or Ireland or to the growth or otherwise of air travel, as receipts from passengers at this time of year are only about one-third of total ship receipts; and of the two-thirds derived from merchandise, mails, and parcels, much appears to be traffic unsuited to to air transport.

British Road Services receipts were £70,000 less than the record figure for Period 11, but still well above the corresponding figure for last year.

PERCENTAGE VARIATION 1953 COMPARED WITH 1952

	Four weeks to November 29	48 weeks to November 29
British Railways—		
Passengers	+ 2·4	+ 3·0
Parcels	+ 8·7	+ 7·5
Merchandise & livestock	+ 4·5	+ 2·0
Minerals	+ 5·1	+ 8·1
Coal & coke	+ 9·8	+ 7·6
Total	+ 6·0	+ 4·8
C & D. services	+10·4	+ 3·2
Ships	+ 3·2	— 0·9
British Road Services	+ 6·4	+ 3·
Road Passenger Transport	+ 5·3	+ 4·8
London Transport—		
Railways	+ 4·8	+ 1·5
Buses & coaches	+ 6·9	+ 3·6
Trolleybuses & trams	+ 4·1	— 3·3
Total	+ 5·9	+ 2·0
Inland Waterways	+ 4·0	+ 1·3
Aggregate	+ 6·0	+ 4·2

Steam Locomotive Design

NO machine of any kind is completely predictable in performance; conversely some locomotive performances that superficially appear anomalous are not so when the effects are examined in the light of basic principles. The paper delivered before the Institute of Locomotive Engineers last Wednesday by Professor W. A. Tuplin, Professor of Applied Mechanics in the University of Sheffield, condenses a number of single fundamental facts that are either not universally appreciated or not always used were it not advantageous to do so. Much has been written on the steam locomotive during the 150 years of its existence and it is almost impossible to make any comment or suggestion that has not already been made at some time or another, and from the point of view of design and efficiency imperfection or inattention to detail can affect a design which is in many ways excellent.

Local operating conditions may find a weakness that does not show itself otherwise, and indifferent handling may also prevent a locomotive from demonstrating its full capabilities. In actual fact no distinction exists between theory and practice and rational examination of design, manufacture and performance of a locomotive demands the common-sense application of existing knowledge. On the subject of firebox design Professor Tuplin said that British Railways locomotive boilers were partly divided into those with narrow fireboxes and those with wide fireboxes; a grate area of 35 sq. ft. separates the two classes. For example, commendation on the wide firebox after examination of the results of the 1948 locomotive exchange trials could equally well be expressed as commendation of grate areas over 35 sq. ft.

A comparison between narrow and wide fireboxes of common grate area is necessary before either type can be approved at the expense of the other. A locomotive with a wide firebox of 42 ft. grate area may be expected to handle heavy trains with greater ease than one with a narrow firebox of 31 sq. ft. since it is much bigger; its 35 per cent margin in power capacity can cover indifferent handling. In favourable circumstances a locomotive with a grate area of 50 sq. ft. can do most of the work demanded of it on British Railways with only about half the grate area really effective. The performance of a locomotive boiler can be affected considerably by changes in the position of the firebox arch because of its effect on distribution of the gas flow, and some American tests have shown that a shallow bridge attached to the firebox roof has a marked influence on this aspect.

Direct examination of gas flow in a locomotive firebox presents certain difficulties, but with certain types of industrial furnaces hydraulic models have been used with success to predetermine the effect of changes in design, a technique which might be applied to locomotive firebox design and methods of firing. The higher the temperature produced by a superheater the greater the amount of heat that must be given to each pound of water and so the smaller the amount of water that can be evaporated for each pound of coal burned. The Churchward practice in using superheat only high enough to avoid condensation in the cylinders was fundamentally sound and may probably be achieved in favourable operations, but may not in other conditions. Better overall results are obtained from superheaters larger than the bare minimum since they may still avoid cylinder condensation even when their efficiency is partly impaired, so it is also that no perceptible advantage occurs from outsize superheaters because they can do no more than avoid cylinder condensation and the expansion ratios practicable in a locomotive superheater of about 250 deg. F. suffices for that.

Professor Tuplin questions whether any gain can be expected from the raising of steam pressures or temperatures and suggests that the best designs can be expected from those who regularly re-acquaint themselves with the defects in building, manufacture, and running locomotives under working conditions. The basic principles are simple but detailed design from the point of view of economy in manufacture and operating still leaves room for vigorous testing. The advantages and disadvantages of alternative designs may be so nearly balanced that elaborate investigation would be required to demonstrate superiority of one over the other. In such a case, the choice is usually decided by tradition or personal preference. For example, very few, if any, boilers with Belpaire fireboxes have been designed and built at Doncaster; on the other hand no boiler has been produced at Swindon within the last 50 years without a Belpaire firebox. The majority of Doncaster-built engines with more than two cylinders have three, but no three-cylinder engine has ever been built at Swindon.

Sudan Railways

WE have received from Mr. J. R. Farquharson, General Manager of the Sudan Railways, a copy of the report for the period January 1, 1950-June 30, 1951. This report, which is signed by Mr. R. J. Hillard, General Manager from 1949 to 1952, is the first report printed since that for the year 1940, and is for an 18-month period as the former practice of covering the period January 1-December 31 each year has been discontinued, the fiscal year now ending on June 30.

The total recorded capital expenditure to June 30, 1951, was £E.15,517,092, of which £E.11,970,669 was on account of railways and £E.3,546,423 on account of steamers and other ancillary services. The route-mileage of line open on that date was 2,016, and 2,325 miles of river services were then worked. Gross revenue during the period under review totalled £E.9,698,752 and expenditure £E.6,962,353, leaving a net revenue of £E.2,736,399. Rail traffic receipts were as follow:—

—	1949	1950	18 months to 30.6.51
Passenger receipts, £E.	751,651	695,934	1,127,305
Goods ,, ,, ...	3,430,633	3,612,849	6,259,503
Total rail ,, ,, ...	4,182,014	4,308,783	7,386,808
Average receipts per passenger, m.ms....	386	398	388
Total revenue-earning goods tonnage ...	982,816	1,008,179	1,740,837
Average receipts per ton, £E.	3·301	3·403	3·444
Average receipts per ton-km., m.ms. ...	4·581	4·814	4·992

The abnormal rainfall referred to above was the outstanding feature of the 18-month period under review, and resulted in complete dislocation of train services between Khartoum, Port Sudan, and Wadi Halfa, and between Haiya Junction and Kassala; it also caused interruption to connecting steamer services. For six weeks no goods traffic was carried, and acute congestion occurred at Port Sudan resulting in a shortage of essential commodities. As soon as repairs had been effected intensive services were run to restore the situation. These rains were followed by exceptional harvests and a record cotton crop such that it could not be carried immediately; a system of priorities had to be introduced to regulate movement.

Apart from the repairs of washouts and other damage, there was little of importance reported by the various departments. Seven new shunting engines, however, were received during the first half of 1951. Labour disputes late in 1950 and early in 1951 threw a severe strain on the senior officials. A fundamental change is reported in the relations between the administration and its employees with the conversion of the Worker's Affairs Association into a legally established trade union. Eleven stoppages of work involved a loss of some 236,000 working men-days; of these, five involved all railway employees. At the beginning of 1950 the General Manager convened a special committee to inquire into the conditions of service of unclassified staff. As a result of the recommendations submitted by this committee and subsequent negotiations with the Sudan Railway Workers' Union, many improvements were introduced, including reduction in workshop hours and re-adjustment of shift working of many staff; and assessment of overtime on new basis (comprising basic pay and cost of living allowance) and at enhanced rates, and extended to categories previously ineligible for overtime, such as engine crews and guards.

LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

"Stop and Proceed"

December 8

SIR,—I have read with interest the Ministry of Transport accident report, discussed in your December 4 issue, on the London Transport Central Line collision on April 8, 1953, at Stratford.

There is one point which seems to me rather ludicrous when it is matched against the background of almost foolproof automatic signalling and other safeguards which are in current use on this system. I refer to the fact that in the case of a breakdown it is apparently the custom that authority to proceed under the "stop and proceed" rule can be given to the driver by those who, one would assume, had only delegated authority for so doing.

Although it is probably quite in order for a station or traffic inspector to originate "stop and proceed" procedure, it is apparently left to persons such as porters to hand on this information to the driver. Nor does there seem to be any check that the said porter has got the instruction correctly or that he has given it verbally correctly to the driver. Surely it would be better for something in the nature of a train order to be written out at the inspector's office and shown to each driver. It could then be read and initialled by the driver to show that the order is correctly understood.

Such a procedure is in common usage in the fighting services when instructions and signals have to be known by several persons, and a similar procedure is adopted for abnormal working on many railways over the world. Were it adopted it is doubtful whether any extra delay would be experienced.

Something of the sort might be adopted also on main lines. There are occasions when signal or block failures occur and it is on the shouted authority of the signalman that the train is allowed to proceed past signals at danger. Sometimes, owing to noise and poor visibility, it is by no means easy to hear and understand clearly such messages on the footplate.

Yours faithfully,
P. RANSOME-WALLIS

The Corner House, Canterbury Road, Herne Bay

Bridging the Ganges

December 9

SIR,—In the editorial note in your December 4 issue on the projected bridge over the Ganges at Mokameh, you refer to this river being at present unbridged between Benares and Naihati.

I would like to point out, however, that the bridge at Naihati, the Jubilee Bridge, which carries the Eastern Railway line connecting Naihati with Bandel, crosses the Hooghly and not the Ganges.

The only bridge over the Ganges below Benares at present in existence is the Hardinge Bridge at Paksey, which carries the main line of the Eastern Bengal Railway (Pakistan) running north from the Indian border at Banpur. This bridge, which was opened in March, 1915, consists of 15 main spans of 350 ft. clear and six approach spans of 75 ft. and carries two broad-gauge tracks and a cantilevered footway. The Hardinge Bridge is notable for its very extensive river training works, claimed to be the largest of their kind in the world. It was named after Lord Hardinge of Penshurst, Viceroy of India, who performed the opening ceremony.

Yours faithfully,
W. A. H. WATTS

1A, Grosvenor Gardens, S.W.1

[Strictly speaking, our correspondent is correct, though we were considering the Hooghly, which is a deltaic channel of the Ganges, as part of that river.—ED., *R.G.*]

Publications Received

British Standard Locomotives.—London: The Locomotive Publishing Co. Ltd., 88, Horseferry Road, S.W.1. 8 in. × 6½ in. 19 pp. Paper covers. Price 1s. 6d.—The story of the introduction and appearance of British Railways standard locomotive types is told briefly in this booklet, illustrated by reproductions from official photographs and diagrams of those which have entered service so far. The names of the "Britannia" and "Clan" class Pacifics are listed, and there is a table of the principal dimensions of ten of the classes.

Overseas Railways, 1953. London, S.W.1: *The Railway Gazette*, 33 Tothill Street. 11½ in. × 8½ in. 120 pp. Fully illustrated. Paper covers. Price 7s. 6d.—In this, the sixth edition, the manifold activities of railways in many countries, achieved, in progress, and planned, are described by heads of administrations or other senior officers. They include such widely differing aspects as altered traffic flows in India resulting from Partition; new construction in West Africa; the boring of the Rimutaka Tunnel in New Zealand; dieselisation of the Trans-Australian Railway; electrification in South Africa, the Belgian Congo and Brazil; C.T.C. in Rhodesia; and signalling and marshalling yard improvements, dieselisation, and additions to steam, diesel and electric motive power and to passenger and goods rolling stock. The railways of India, as is fitting in their centenary year, are fully dealt with. Various types of locomotive, carriage and wagon are described with reference to the particular requirements of the system for which they are designed. Staff, welfare and housing are discussed with reference to several systems. The accounts given show that no diminution of demand is likely in the foreseeable future for railway material of many types for railways in regions differing as much in their economic development as in their climate.

Stewarts and Lloyds Limited 1903-1953. London: Publicity & Publications Department of Stewarts and Lloyds Limited, Brook House, Upper Brook Street, W.1. Edited by A. L. B. Thompson. Produced for the publishers by A. N. Holden & Co. Ltd. 11¼ in. × 8½ in. 160 pp.—An unusual feature of this fine record of the undertaking since its formation fifty years ago is the inclusion of many reproductions of photographs illustrating historic events, not necessarily directly concerning the company, which occurred at the time covered by the text. By the use of this device the contemporary scene at home and abroad is presented in synchronisation with the text, the whole combining to form a book of great interest to the historical student. Facsimilies of notices and documents in the possession of the company relating to hours and conditions of work provide much food for thought to a modern reader. In addition to the wealth of material presented on the progress and personnel of the two companies whose names are incorporated in the present undertaking, a comprehensive history of each of the absorbed companies is given.

Supplementary Data on Nimonic Alloys.—To make available, as rapidly as possible, figures determined since the last edition of their data book on the Nimonic alloys, Henry Wiggin & Co. Ltd., has issued a supplementary leaflet containing additional and amended tables. Torsion properties of Nimonic 80A and Nimonic 90 have now been determined over the range 20-1,000°C., and more complete fatigue figures are now available. Short-time creep tests on Nimonic 95, the latest alloy in the series, are included and new tables summarise recommended heat-treatments and acceptance creep tests. Copies are available from the company at Wiggin Street, Birmingham, 16.

THE SCRAP HEAP

Red Herring

Label seen on a fish box in an express train: "If not delivered within ten days—never mind!"—*From the "Washington Times Herald."*

Half-a-Train Onwards

A guard leaped from his van and raced along the track shouting to the engine driver when a goods train broke in two at Potters Bar, Middlesex. The last six wagons and the guard's van were left standing, but workmen further down the track called to the driver who stopped the train.—*From the "Daily Express."*

Cooler Down Below

A week ago we heard of energetic activities to keep ice and frost away from London Underground lines with the assistance of anti-freeze baths. Now we learn of "special measures" to reduce the heat in the Underground, and all we straphangers who have well-nigh suffocated in overcoat and muffler will be grateful for this, too. Every day it becomes more likely that the London winter will be best spent in the controlled smogless atmosphere below ground.—*From "The Irish Times."*

Not Fare

The solicitor for the London Transport Executive said at Marlborough Street police court on December 5 that a George II halfpenny dated 1757, with which a defendant had tried to steal a 10d. ticket and 1s. 2d. change from a machine at Oxford Circus Underground station, was worth 3s. The accused was stated to have been seen to put the halfpenny into the 2s. slot, but it did not operate the machine. He was stopped by a railway detective, and on him were found 17 foreign coins and another old English coin, which were duplicated in his collection and he hoped to swop with other collectors. He was fined 40s. —*From "The Times."*

Act of Faith

British Railways have shown great faith in the travelling public by putting care and thought into the making of a really attractive new waiting room at York. . . . It would be no hardship to spend an hour or two in such a room on even the dreariest of cross-country journeys.

But how long will this bright and cheerful room remain fit to sit in? How soon will the foam rubber upholstery be explored with pocket knives, the walls defaced with scribbled indecencies, the ashtrays stolen or smashed, and the floor ankle-deep in litter? If, as reformers claim, good surroundings encourage people to behave decently, the York experiment should be a notable step towards the reform of the railway-using public.

If there are incorrigibles who will treat this new room as if all railway property were fair game for hooliganism it is to be hoped that station officials will catch them at it and that York magistrates will teach them a sharp lesson. If the railways provide facilities for more comfortable travel it is up to the rest of us to show that we deserve them.—*From "The Manchester Guardian."*

[The waiting room at York is described and illustrated on page 696.—ED., *R.G.*]

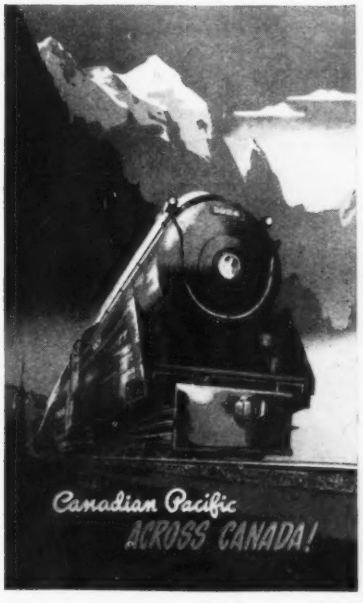
Motorcars Through Railway Tunnels

The various railway services for conveying motorcars on flat trucks through the longer railway tunnels in the Alps are well known. These are provided largely for traffic when the mountain road is closed or made difficult by snow and ice, which may be for some eight months of the year. Until recently a similar service through a tunnel was much patronised by motorists travelling between Rosenbach, in Austria, and Jesenice, in Jugoslavia, a distance of eight miles, because the road over the pass was bad even in summer months.

A correspondent points out that the only regular service of this kind in Britain is that of the Western Region through the Severn Tunnel, between Pilning High Level on the English and Severn Tunnel Junction on the Welsh side, 6¾ miles, including the 4½ miles of the tunnel.

The type of vehicle used is a 21-ft vacuum-fitted "Carriage Truck, Open," of which a supply is kept at both Severn Tunnel Junction and Pilning High Level. The winter timetable shows three workings each way through the tunnel on weekdays and one on Sundays, the time occupied varying between 13-15 min. westbound and 15-21 min. eastbound. The single rate for a motorcar not exceeding 8 h.p. is 12s. 1d. and for one exceeding 8 h.p., 14s. 7d.; conveyance is at owner's risk.

Canadian Railway Publicity



One of two recent posters produced by the Department of Public Relations, Canadian Pacific Railway; the other represents a diesel in similar surroundings

Sleeperwalker

A passenger walked in his sleep—out of a fast-moving train in Northern France. He was taken to hospital.—*From the "News Chronicle."*

Rhodesian Station Names

There is a lot of fun and interest to be got out of African place names and the English versions thereof. I often think of an Ndola booking clerk's expression when I asked for a ticket from "I See" to "Left Me Behind" via "Swollen Legs" and "Little Bushbuck." (Ndola—Luanshya via Muwamba and Kasongo).

Sakania means "Shake"; Misundu is "Leech" (singular), Minsindu is "Leeches" (plural). Mutenge is "Roof," Mabote is "Plenty of Honey Beer," Nkana is "I Refuse." Kafironda (which is really Kafilonda) is "Many Small Sores"; Mufulira (should be Mufulila) is "Smithy" or "metal working place."

There is one very interesting name—Chambishi. This conjures up visions of Luxor and the Valley of Kings. It is a variation of Chambesi which is in itself a variation of Zambesi—the "River of the God Bes." This Bes was an Egyptian God of some 6,000 years ago (plus or minus 4,000 B.C.) and it is most interesting to speculate how, why, and when an Egyptian god's name was given to places in this country.—*From a letter to "Rhodesia Railways Magazine."*

Christmas Eve

The crowds, the bustle and the fuss,
The queueing at the terminus
Are over now; the roar and rush
Give place to an expectant hush.
Home-goers, waiting for their train,
Hear a late caroller's refrain.

The booking-office kettle sings,
The late clerk thinks of kindlier things—
A little chap, maybe, at home,
Who, sure that Santa Claus will come,
Some hours ago put into place
An optimistic pillowcase.

Tonight all sorts of folk will find
The joy that goes with being kind
And even harassed railwaymen,
Endeavouring to smile again,
Will do their level best to see
Some virtue in the B.T.C.

The bells ring out and, in their train,
The miracle is wrought again;
Gone are the heart-aches of the year,
The grim foreboding and the fear,
For, with the light of Christmas morn,
Hope is eternally re-born.

A. B.

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

EAST AFRICA

Tanganyika Harbour Works

The Administration has received a report from its consulting engineers that the work on the deepwater quays at Dar es Salaam is four months behind the contractors' latest revised programme. Difficulty has been experienced in the initial stages in block setting and developing the technique of speedy block laying. The first deepwater berth will not be ready for use until the end of 1954 and the other two not until some time in 1956. The original contract date for the completion of all three deepwater berths was October, 1954.

Large tonnages are being handled over the present lighterage quay and congestion avoided, but there is a limit to what can be done with existing facilities and from the time of amalgamation in 1948 the East African Railways and Harbours Administration has considered that some addition to port facilities at Dar es Salaam would be necessary by 1954 at the latest. To date, 395,000 cu. yd. have been dredged from the harbour and channel areas at Dar es Salaam.

The work at Tanga which is being carried out under the direction of the Administration, and which is due for completion in the middle of next year, is going well although heavy rains at Tanga, bogging down the heavy machinery, have caused delay from which it will be difficult to recover.

At Mtwara remedial measures to the quay wall are nearly completed and the first berth, with transit shed, should be available for public use in the near future. The second berth and shed will follow within a few months. It is hoped, therefore, to open the port and the Southern Province Railway to public traffic early in the new year, but a definite announcement will be made shortly.

BRAZIL

Brazil-Paraguay Treaty

The Paraguayan Government is seeking an outlet for its produce via Santos and Paranagua. The Paraguayan and Brazilian railway systems will be connected at Ponta Pora, in Mato Grosso (see our March 28, 1952, issue), and at Iguaçu, in Parana. The final details of the treaty are now being drawn up.

UNITED STATES

Traffic Developments in Chicago

The Chicago Transit Board, the governing body of the Chicago Transit Authority, is to spend $7,000,000 on the outright acquisition of the Evanston-Wilmette line. This has been the property of the Chicago, Milwaukee, St. Paul & Pacific Railroad, but since 1907 it has been leased to the Transit Authority which has worked it as part of the city's rapid transit system.

The branch is just over 8½ miles long, and the Chicago North Shore & Milwaukee Railroad, an electrically-operated inter-urban line, also works both passenger and freight trains over it. Freight is interchanged with the Chicago, Milwaukee, St. Paul & Pacific at Buena Park yard, and this service will probably be undertaken in future by the North Shore system.

The city has placed a contract for two new underground lines, each ½-mile long, to connect the present Milwaukee-Dearborn Subway line with a rapid transit line being built in connection with the new Congress Street superhighway. The centre strip of land between the dual carriageways will be used to accommodate the rapid transit line, which is expected to cost $3,000,000.

New Burlington Stations

The Chicago Burlington and Quincy Railroad has begun new stations at Hannibal, Missouri, and Quincy, Illinois. Quincy is on the original Burlington line from Galesburg to Kansas City which forms part of the new Kansas City cut-off of the Burlington, described in the April 10, 1953, issue, over which both day and night high speed streamline services are now operating between Chicago and Kansas City; Hannibal is 17 miles from Quincy on the St. Louis-Burlington line. At Hannibal $120,000 is being spent on the new station building and at Quincy, where the new West station will replace the old station in the town, the cost is $275,000.

Illinois Central Acquisition

The Interstate Commerce Commission has authorised the Mississippi Valley Corporation, a wholly-owned subsidiary of the Illinois Central Railroad, to acquire control of the Vicksburg, Shreveport & Pacific Railroad, which extends for 174 miles from Vicksburg across Louisiana through Jackson and Monroe to the border of Texas at Shreveport. Since 1926 the Illinois Central has operated this line as an integral part of its system, and the acquisition is to reduce the rental and tax payments under the lease which the Illinois Central has had to meet annually until now.

ITALY

New Container Company

A new company has been set up to build, sell, and hire containers. The company, called Cemat, was formed with the co-operation of the Ministry of Transport which has a majority share of 51 per cent in the initial share capital of lire 150,000,000; the remaining 49 per cent of shares have been taken up privately. An agreement between the company and the State Railways envisages, in return for economic and technical facilities and special rates granted by the railways, the establishment by the company of an organisation to develop the use of containers in Italy.

Goods Traffic with Western Germany

Goods exported from Italy to Western Germany in the first half of 1953 totalled 445,000 *tonnes*, including

Self-Propelling T.P.O.

Photo] *[A. J. Richards*

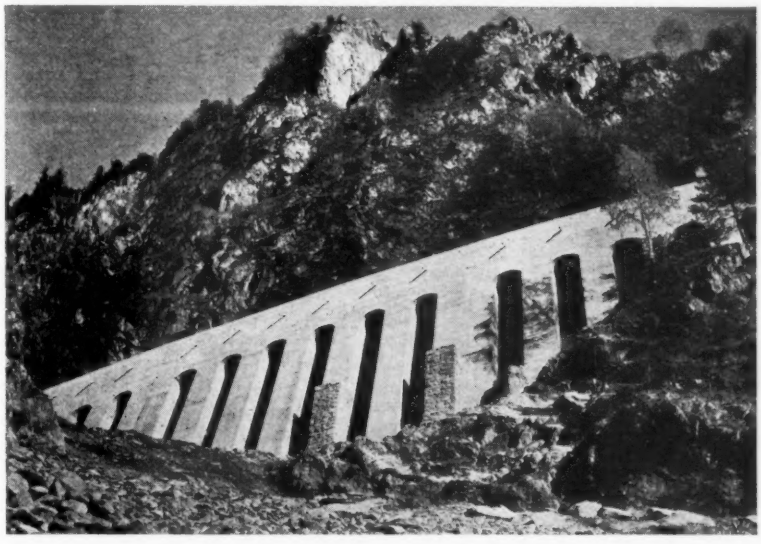
Gas-electric-motor travelling post office at Lincoln, Nebraska, Union Pacific Railroad, one of a fleet owned by the U.S. Post Office: trailers for postal employees can be hauled

306,000 *tonnes* of foodstuffs, 51,000 of chemical products, 64,000 of mineral oil derivatives, 11,000 of textile fibres and fabrics, and 13,000 of miscellaneous items. Of the total, 395,000 *tonnes* was conveyed by railway via Austria and Switzerland, the remainder by sea. Italian imports from Western Germany in the same period totalled 1,736,000 *tonnes*, only about 32 per cent conveyed by railway.

SWITZERLAND

New Snowshed on Loetschberg Line

Five snowsheds protect the Loetschberg line south of Goppenstein Station, close to the southern end of the Loetschberg Tunnel from avalanches and falling rock. A sixth snowshed has now been built on the same section, where the line runs down the steep slopes of the Lonza gorge to the Rhône valley. It is 348 ft. long, and nearly 23 ft. high. To enable it to withstand the impact of heavy falling rock it has been built as a massive reinforced concrete structure. As an additional protection the roof is covered by a layer of earth nearly 5 ft. thick. Because of the steepness of the slope it was necessary to take the foundations 72 ft. below the level of the track.



The new snowshed on the Loetschberg Railway in the Lonza Gorge

The building of the snowshed, begun in April, 1953, was completed in October without mishap and in spite of the heavy summer traffic on the line which is single-track. The cost was approximately fr. 465,000.

FRANCE

Bischheim Workshop Conversion

The development of railcars and electrification on the S.N.C.F. has necessitated the conversion of a large number of steam locomotive workshops to cater for diesel and electric motive power. In accordance with this policy, it was decided that Bischheim Workshop should be converted to handle the railcars operating in the Eastern Region.

Steam locomotives, after crossing a turntable, ran on to a transporter which moved them to the required shed track. This transporter could, however, only handle vehicles with an overall length of 49 ft. and was therefore not suitable for moving railcars of an overall length of up to nearly 92 ft. in some cases. A small set of sorting sidings was installed at the north end of the workshop and railcars were directed to the appropriate shed track from them. At a later date, to facilitate handling, the transporter was replaced by one capable of handling vehicles up to 82 ft. in length.

Other alterations included the construction of a workshop for the maintenance of internal combustion engines, the installation of test benches, and the fitting up of the locomotive boiler shop as a radiator construction centre.

The workshop now handles 15 to 18 railcars per month undergoing periodical maintenance, two or three damaged railcars repaired, and 40 to 50 general and intermediate overhauls of internal combustion engines.

HUNGARY

Embankment Built with Explosives

A novel method is being used to build an embankment across marshy ground from near Sükösd towards Baja, in Southern Hungary. This 650-yd. embankment had to be built on ground consisting of a top layer of 7 ft. of peat, over more than 30-ft. depth of soft muddy earth. Below that was firm sand.

It was considered necessary to make a complete change in the soil composition down to the sand, but to shift even the 230,000 cu. m. of unstable ground without mechanical aid would have taken 100 men a whole year.

As an alternative, 7,000 cu. m. of sand were dumped on the first test section of the projected embankment. It sank over 5 ft., compressing the peat layer. Then the peat layer was broken up by explosive charges, and another two feet subsidence took place. Finally, holes were bored 36 ft. down into the soft soil, explosive charges were detonated in them, and the whole mass settled another 9 ft., giving a completely firm foundation for the embankment. The mass of material above had caused the explosive effect to be outward into the soft soil instead of upward. Having successfully consolidated the first section, the engineers repeated the same method throughout the embankment.

Another problem encountered was the transport of the required 500,000 cu. m. of sand to the site owing to the nature of the ground. It was solved by building a sand pipe-line, as follows. With the aid of a powerful "water jet" a sand bank was broken up into sludge which was pumped through the pipes to the embankment. The embankment was divided up into square sections forming settling tanks into which the sludge was piped. When the sand had settled to the required thickness, the retaining wall was removed.

BELGIUM

Brussels-Liége Electrification

Electrification between Brussels and Liége is being carried out in two stages, in chronological order: Brussels-Louvain and Louvain-Liége. The Malines-Louvain and Voroux-Goreux—Kinkempois lines are being electrified as part of the scheme. Important alterations are being undertaken at Louvain, Liége Guillemins and Kinkempois station and are to begin at Waremme, Fexhe-le-Haut-Clocher, and Ans.

Foundations for the overhead gantries are completed between Schaerbeek and Louvain. Current for the line will be fed from substations at Brussels Nord, Louvain, Landen and Voroux-Goreux; there will be sectioning cabins at Kortenberg, Tirlemont and Waremme.

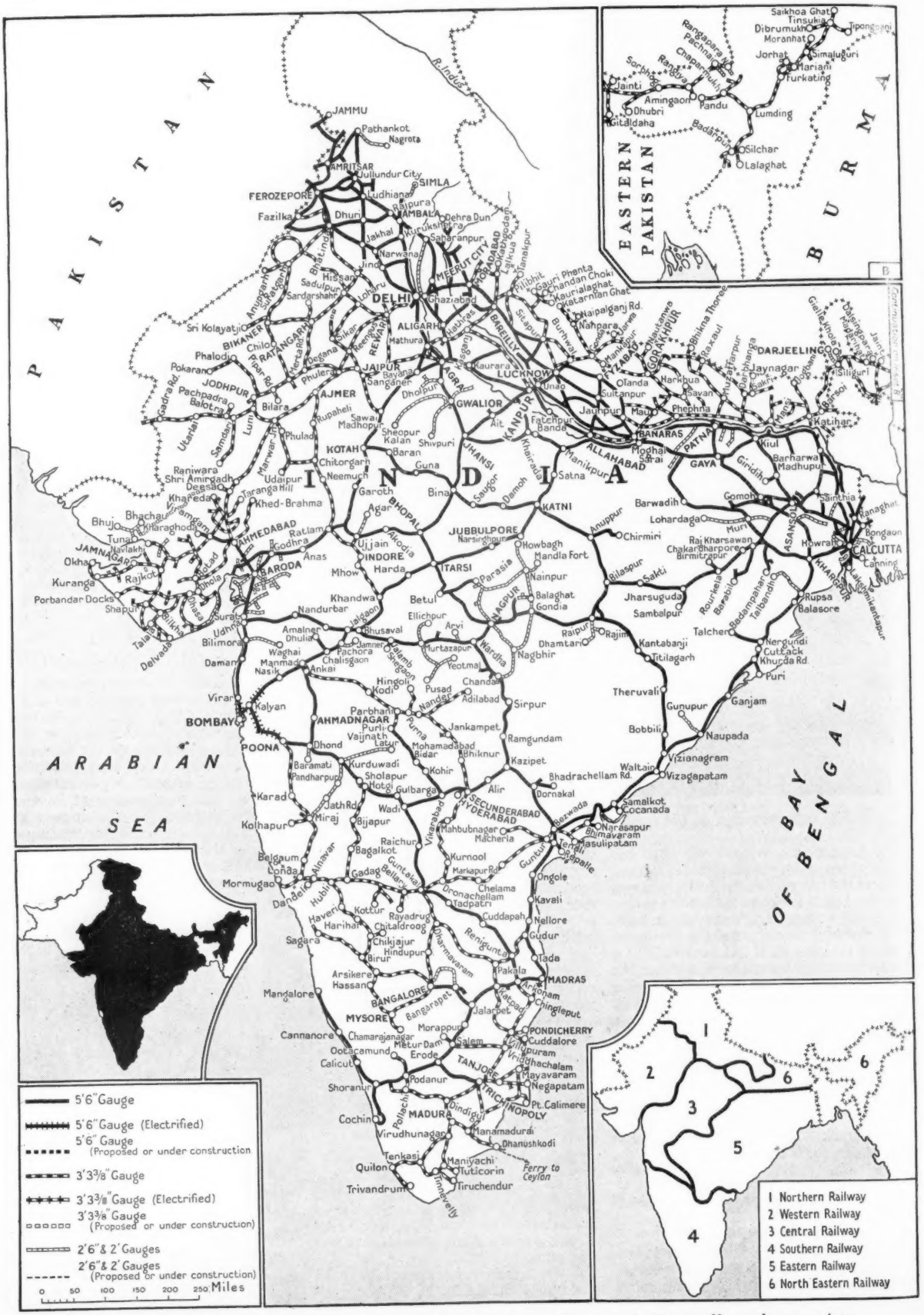
WESTERN GERMANY

Freight Handling Improvements

After July 1 next, Federal Railway wagon labels will no longer show the whole list of marshalling yards to be passed en route, but merely a code designation indicating the "target yard" so that there will be a flexible system of routing the wagons to their destination in the way which is most advantageous under conditions at the time, thus giving relief to over-burdened yards or lines.

Two-millionth Concrete Sleeper Laid

A ceremony near Murnau, in Bavaria, marked the occasion of the laying of the two-millionth reinforced concrete sleeper by the Federal Railway since 1949.



Railways in the Republic of India, showing the positions of Moghal Sarai and other traffic exchange points

Wagon Availability in India

Measures to increase line capacity: allocation of wagons by priorities

THE overall improvement in operation reported on the six railways in the Republic of India had in general been maintained until it received a serious setback last May because of exceptionally severe hot weather in different areas throughout the country. This caused unprecedented water scarcity, locomotive troubles, and sickness amongst locomotive running staff. The adverse conditions continued until the Monsoon had set in by the middle of July.

Immediately afterwards heavy rains at Bulsar on the broad-gauge main line of the Western Railway, in the Allahabad and Cawnpore areas, and floods at Rajahmundry on the East Coast, caused serious dislocation of traffic on the railways concerned. The railways have overcome these difficulties and with the exception of the North Eastern Railway had cleared, generally all the arrears of traffic, and the position by the end of the hot weather was much better than that at the same time in 1952.

The five or six months' cold weather that has just started is expected to bring the usual increasing wagon demands on the railways, and in the Republic of India, as before in recent years, it may be impossible to meet them currently. Action to increase the capacity of the six railways has for some time been planned by the Railway Board on a long-term basis, and falls roughly into three categories, namely increases in total wagon holdings, in availability of motive power, and in line and yard capacity and transhipment facilities.

More Locomotives and Rolling Stock

The object is to secure by April 1, 1956, enough locomotives and goods vehicles to meet peak period demands currently. Particulars of locomotive and wagon orders placed with and completed by overseas builders have been given in this journal from time to time.

Increasing Line Capacity

The sections of line on which capacity is to be raised by construction of additional running loops, doubling yard facilities, improved signalling, and so on, with the capacity in wagons per day, are shown in the accompanying table.

The first of these projects is on part of the Assam Rail Link, constructed shortly after Partition to give a direct rail route between Assam and what is now the Republic of India without passing through Pakistan territory. The Siliguri-Alipur Duar section consists largely of part of the former Bengal Dooars Light Railway.

Line capacity is less of a problem on the remainder of the Assam Rail Link, both on the newly constructed line and on lines of the former Eastern Bengal (later Bengal Assam) Railway on which capacity was increased during the war when these formed part of the line of communication with the Burma theatre of operations. Partition has caused diversion of tea, oil, rice, sugar, and other products of Assam, also tea from the Bengal Dooars, over the Assam Link, and hence the need for increasing capacity.

East Coast Main Line

The Bezwada—Madras section of the East Coast main line of the former Madras & Southern Mahratta railway carries coal from the Bengal-Bihar coalfield and other products of Bengal besides a considerable traffic between the Northern districts of the State of Madras (recently transferred to the new Andhra State) and also traffic to and from Hyderabad and the North over the Central (former Nizam's State) Railway, for which Bezwada is the junction point.

The flow of traffic before Partition was between the ports of India and the interior, and to a lesser extent from north to south. With the present emphasis on national economic self-sufficiency, the larger volume of traffic now is from north to south, without a balance movement northwards, as traffic originating in South India continues to move to ports. This has caused traffic congestion, particularly with southbound traffic for Madras and beyond converging at Bezwada.

The problem of traffic via Katni is largely that of movement of coal and empties from and to the Central India coalfields.

Cheoki, Agra East Bank, and Moghalsarai, are focal points with a complex pattern of movements, complicated at Agra by the necessity for transhipment between the broad gauge Central (former Great Indian Peninsula) and Northern (former East Indian) and the metre-gauge Western (former Bombay Baroda & Central India) Railways. Congestion, or the threat of it, at these three points has long been a problem. Measures to increase the throughput of wagons would probably take the form of increasing yard facilities.

Moghalsarai Yard

The position of Moghalsarai, as the map shows, is exceptional. There has been, on the whole, a progressive increase in the total amount of traffic that has been moving through Moghalsarai. The tempo of movements had somewhat abated due to the abnormal hot weather conditions mentioned previously and on certain occasions traffic had to be regulated. Nevertheless an overall improvement over the previous two years' performance has been maintained. The movement from the Northern to the Eastern Railway has been predominantly that of empty wagons for the Bengal-Bihar coalfields, while that from the east to the west is almost that of fully loaded traffic of which about 75 per cent is coal.

Priority of Allocation of Wagons

While wagon demands continue in excess of the available rail transport capacity, some kind of rationing has to be enforced. Until about the middle of last August, this was based generally on the relative importance and urgency of the requirements of various commodities and they were arranged in a numerical order of preference.

When the demands under higher classes of preference were heavy the movements for lower classes and non-preferential traffic had to be severely curtailed, and from certain areas the non-preferential traffic did not move at all for fairly long periods. This sometimes affected adversely the economy of the areas despatching traffic low in the order of preference.

With a view to remedying this, a revised procedure has since been introduced, which, whilst ensuring the movements of essential commodities, raw materials and finished products for certain basic industries on a planned basis, also provides for the movement of all commodities in varying quantities according to the conditions obtaining on different railways at different times.

The main object of the new procedure is that all commodities should have some share of the available rail transport. As operation has been generally easy since the adoption of this new procedure, it cannot be considered yet to have been put to any severe test. It is, therefore, not possible to say how far it has succeeded in serving its purpose.

Railway	Route	Gauge	Present capacity	Planned capacity	Remarks
North Eastern ...	Siliguri-Alipur Duar ...	Metre	160	350	Work in hand ; expected to be completed by 1954-55
Southern	Bezwada-Madras	Broad	300	420	Work in hand ; expected to be completed by 1955-56
Central	Via Katni-Merwara ...	Broad	265	350	As above
Central/Eastern ...	Via Cheoki (Allahabad) ...	Broad	190	240	Under examination
Western/Central/ Northern	Via Agra East Bank ...	Broad and metre	250	300	Under examination
Eastern/Northern ...	Via Moghalsarai	Broad	1,500	1,800	Under examination

Improving the Sudan Railways

New rolling stock, permanent way, river craft, and port equipment to deal with increasing traffic

LIKE most other African countries, the Sudan experienced a postwar expansion which threw additional traffic on to the railway at a time when normal renewals of rolling stock were in arrear because of the war, and new equipment hard to obtain. Not until 1948 was sanction to place the first batch of orders obtained, and since then there has been a continual struggle to keep pace with the traffic offering. Over the last twenty years the railway has been required virtually to double the tonnage conveyed.

The postwar orders for locomotives consist of the following: Fifteen 0-6-0 tank steam shunting engines ordered in 1949-50 from the Hunslet Engine Co. Ltd. largely replacing obsolete steam shunters; five 0-6-0 diesel-electric shunting engines from the English Electric Co. Ltd. for use in Port Sudan; nineteen 2-8-2 main-line tender locomotives for light rail from the North British Locomotive Co. Ltd. (mainly replacements of old engines); and twenty 4-8-2 main-line tender locomotives for heavy rail (half of them replacements of old engines), also from the North British Locomotive Co. Ltd.

The fifteen steam shunters, all of which are now in service, are virtually a repeat of a well tried and extremely simple class of engine already in service. They have 3 ft. 3½ in. dia. wheels, two cylinders 14 in. × 20 in., boiler pressure 180 lb. per sq. in.; their tractive effort at 85 per cent b.p. is 15,184 lb. and weight in working order 37 tons 6 cwt.

Diesel-Electric Shunters

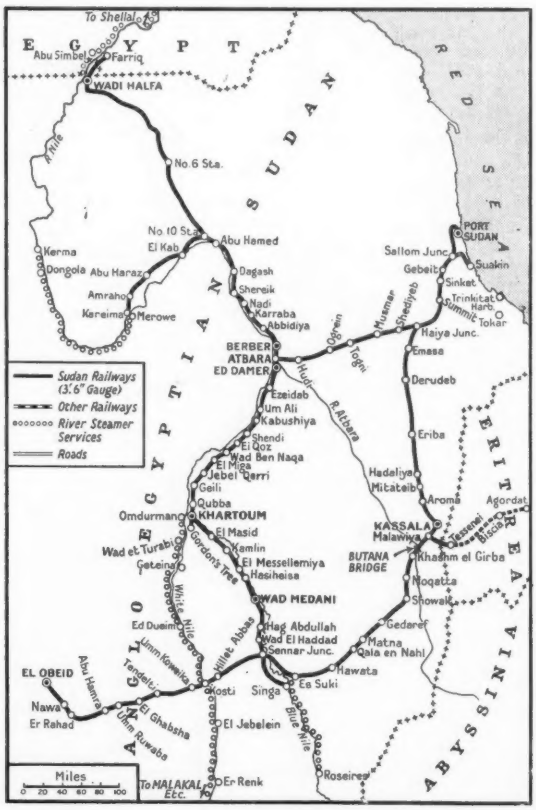
The diesel-electric locomotives are basically similar to two which were purchased in 1936 from the English Electric Co. Ltd. They are of 350 h.p. Port Sudan is the only station where it is considered that the shunting needs are most economically met by power of this type, and now that these engines are in service they undertake the bulk of the work there.

The nineteen 2-8-2 locomotives were received during the winter of 1952-53. They are designed for use on 50-lb. track, and are arranged for oil burning with Laidlaw-Drew equipment. Although basically similar to a class bought in 1923, they have many modifications, and in particular the boiler has been designed to interchange with another class of 51 locomotives. The coupled wheels are 4 ft. 3 in. dia., boiler pressure 180 lb. per sq. in., superheater heating surface 260 sq. ft. and total heating surface 1,385 sq. ft.

The tractive effort at 85 per cent b.p. is 26,000 lb. and total weight of engine and tender in working order 110 tons 17 cwt.

The twenty 4-8-2 locomotives still under construction will be more powerful than any engines at present running on the Sudan Railways.

Two features new to the Sudan are worthy of mention; multi-valve smokebox regulators will be fitted, and the copper firebox will be stayed throughout with Monel metal, including roof stays. These engines are also to be fitted with Laidlaw-Drew oil burning equipment, and manganese steel liners and axleboxes and horncheeks as in the case of the 2-8-2s. The tractive effort at 85 per cent b.p. will be 36,000 lb.



Sudan Railways, showing in the extreme south, Roscires, to which the railway is being extended from Singa

Freight vehicles ordered since the war amount to an increase of some 20 per cent in the total stock on the railway. The total numbers ordered are: 500 30-ton all steel bogie covered goods wagons, of which 280 are already delivered; twenty 30-ton bogie flat wagons; 93 bogie tank wagons for bulk oils, of which 48 are already delivered; and 50 standard wagon underframes for miscellaneous use.

The basic designs ordered follow established Sudan Railways practice with the major exception that cast steel bogies of Davies & Lloyd design have been adopted instead of the previous plate frame bogies. Interchangeability of wheel sets has been retained.

Sudan-Built Coach Bodies

It is usual, though not the rule, to import underframes, but invariably the bodywork of the coaching stock is built in the Atbara Workshops, where the first class coach and sleeping car in the accompanying illustrations were constructed.

Hot boxes are always a problem in the Sudan where high sun temperatures and extremely sandy conditions make it difficult to maintain bearings below the critical point where overheating takes place.

Despite high cost, it has therefore been decided that as many as possible of the older benzine and bulk oil wagons, where fire is a major risk, should be fitted with Isothermos axleboxes, and orders are in hand for supplies to fulfil this policy.

Maintenance Difficulties

Long delivery periods for machine tools after the war have made it very hard for maintenance to keep pace with the growth of traffic. As none of the new main-line locomotives were in effective use until this year, the increased kilometrage to date has been accomplished with a locomotive stud containing a high proportion of over-age units. These two factors have called for energetic and flexible management methods, and it is satisfying to record that the arrears of maintenance have never reached significant proportions, as they easily might have done in the circumstances.

Permanent Way

While the rapid development of the Sudan and the great increase in the trade of the country has necessitated heavier trains and more powerful locomotives, these in turn have needed a heavier type of permanent way. Two weights of rail, 75 lb. and 50 lb. per yard, have been used in the Sudan for many years. As opportunity and finances permitted the length laid with the heavier rail has been extended. The continued increase in

"*El Zahra*," *the first of the new standard vessels on the Wadi Halfa reach*

traffic density makes an acceleration of this policy desirable and the easing of steel supplies makes it possible to speed up the work. By mid-1954, 75-lb. rail should extend continuously from Port Sudan through Atbara and Khartoum to Sennar, 650 miles. When that stage is reached the heavy rail will be continued towards El Obeid.

Track Maintenance Equipment

A number of machines and tools have recently been purchased to assist in the maintenance of track. Of particular interest is a bridge timber adzing machine to Sudan Railways specification powered by a J.A.P. Model 6 engine to machine the rail seats on wooden sleepers.

A steel sleeper reclamation plant of the hot press type designed to reclaim 400 sleepers a day also has been acquired. It is powered by diesel units; the press is hydraulically operated; and the twin chamber furnaces are oil fired. The purpose of this steel sleepers reclamation plant is to recondition worn out steel sleepers by flattening the lugs of the former key fixing of rails and punching holes for a new clip and bolt fixing for the rails.

Modernisation of River Services

The Sudan Railways operate scheduled river services over a route mileage on the Nile totalling about 2,300. There are four main reaches separated from each other by cataracts or other obstacles, but the general type of steamer adopted in the early days of development was similar in all cases. It consisted of a steam stern-wheeler with locomotive type boilers. Accommodation was arranged on upper decks. As the years went by these units were used increasingly for towing barges either with passenger accommodation or for cargo purposes, until in some cases on the White Nile a tow of as many as ten barges has been hauled.

Diesel Propulsion

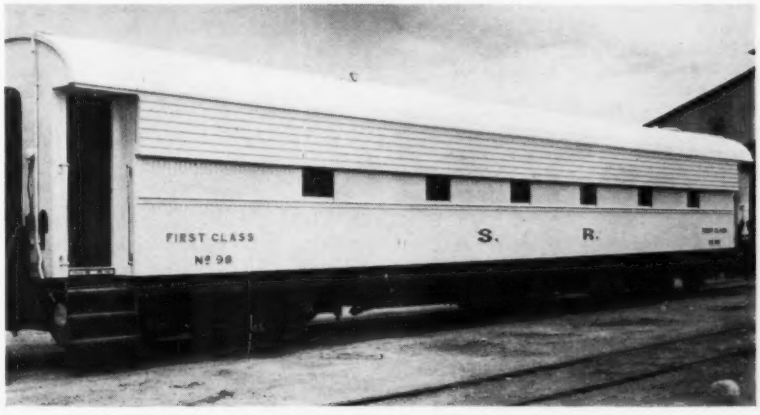
As early as 1927 diesel propulsion was introduced experimentally. The advantages promised were the smaller weight of fuel necessary to carry with the vessel, independence from riverside wood supplies, and lighter propelling machinery giving more weight for accommodation and other purposes. Diesel development proceeded in a rather haphazard manner up to and during the last war, and units varying from self-propelled barges of 120 h.p. up to passenger vessels of 360 h.p. were put into service. Conditions on various Nile reaches dictated slightly differing approaches. On the two most northerly reaches operated, namely Wadi Halfa to Shellal (in Egypt) and Karima to Dongola, navigational conditions made possible tunnel screw vessels in place of the old stern-wheeler.

On the southern reaches this is not so, as masses of floating weed known as *sudd* entangle in the propellers. On the northern reaches the traffic is predominantly passenger, whereas on the southern, cargo is the main feature.

The first of the new standard ships on the Wadi Halfa reach has just gone into service, the *El Zahra*, intended for the express passenger and postal service between Wadi Halfa and Shellal. The vessel was built by William Denny & Bros. Ltd. at Dumbarton, and shipped in parts to Port Sudan and thence by rail to Wadi Halfa Dockyard, where she was re-erected. All the cabin work was designed and fabricated in the dockyards of the Sudan Railways and erected on the ship at Wadi Halfa. She is 145 ft. long and 30 ft. beam, and has a maximum loaded draught of 2 ft. 9 in. which should ensure an uninterrupted service during the low river season. Propelling machinery consists of twin Ruston & Hornsby 6 V.E.B.M. engines with a total of 720 b.h.p. at 500 r.p.m. connecting by shafting to propellers of 3 ft. 8 in. dia. operating in tunnels.

To provide necessary accommodation, two passenger barges also built by William Denny & Bros. Ltd., again with cabin work and plumbing services designed, fabricated and erected by the Sudan Railways, are attached to the vessel, one on each side, and the assembled tow can carry 56 first and 64 second class passengers in double berth cabins. There is also a space for 100 third class deck passengers. Separate dining saloons are provided for men and women on the vessel to comply

Corridor of sleeping car; the bodywork was built at Atbara Workshops by Sudanese labour



First class coach of which the body was built at Atbara

with Sudanese customs. The vessel complete with passenger tow has a speed of approximately 10 m.p.h. Three similar vessels are under construction.

On the southern reaches a somewhat different approach has had to be made to the problem of standardisation in view of different conditions. The towing units will be "quarter-wheelers" driven by twin diesel engines totalling 600 h.p. the first three of these are now under construction at Yarrow's. It is anticipated that these vessels will be able to take six cargo barges of 100-140 tons capacity on the journey between Kosti and Juba, approximately 1,000 miles.

When the full programme for improving the shipping services on this reach has been carried out there will probably be fifteen vessels to this standard design. At the same time new standard passenger and cargo barges of larger capacity have been designed and are being delivered.

When this standardisation is fully effective, the cost of goods haulage is expected to be reduced to something like one-half of what it is today with a mixed fleet of steam and diesel vessels of varying types.

The Sudan Railways Administration is the owner of nearly 5,000 quarters of varying capacity of which employees are tenants. Most of the timber for building work is imported and although cement is now manufactured in the Sudan, the Railways still import considerable quantities. Roofing is now generally of corrugated asbestos and Big Six is widely used.

Building technique has changed very little over the years; the major effort is directed towards increasing output which is very low by European standards and, because wages are not comparatively lower, building costs are high. Concrete mixers, air compressors, and compressed air tools are in general use.

Use of Concrete for Structures

Use is made of reinforced concrete for such structures as overhead tanks, water softener towers, and floors of multi-storey buildings. The first reinforced concrete piled jetty in the Sudan has recently been completed at Kosti on the White Nile. The piles are 14 in. by 14 in. and are spaced at 10 ft. centres. The decking is roughly 25 ft. wide and carries a single track railway line.

Some use has been made of Arcon prefabricated structures, and heavy steel framed corrugated sheeted structures are on order for railway repair shops and running sheds.

Prestressed concrete has been tried on certain works, using the Lee-McCall prestressing system, with satisfactory results.

The Sudan Railways have undertaken on behalf of the Public Works Department the building and civil engineering work of new power stations at Port Sudan and Atbara. The work at Port Sudan is well in hand while a start has just been made in Atbara. The consulting engineers are Messrs. Preece, Cardew & Rider, and Sir Cyril Kirkpatrick & Partners.

On behalf of the Central Government, the railway will be responsible for the erection of two aerial ropeway ferries to span the Blue Nile at points some miles up the river from the Sennar Dam at Abu Hagar and Wad En Nail to provide feeder services from the west side of the river to the rail extension on the east bank. The spans between masts of the two ferries will be 1,100 ft. and 1,400 ft. respectively.

Port Sudan Harbour

The harbour activities at Port Sudan come under the jurisdiction of the railways administration. On the eastern side of the harbour lie the main quays, 2,280 ft. in length, which normally accommodate five ships. The depth of water alongside the quays is 28 ft. at low summer level. The quays are equipped with four 3-ton, four 5-ton, and one 15-ton gantry cranes. In addition there are available for re-handling heavy cargo one 10-ton, two 3-ton steam travelling cranes, and a recently installed 5-ton electric portal crane. An additional 10-ton steam crane will be installed in the near future. Plans are in hand for an extension of the main quays by about 300 ft., and the provision of a new deep water berth 600 ft. long, with transit sheds with full crane and rail service.

North of the main quays are two more berths both road and rail served. On the south side of the harbour are four berths for special traffic. Two of these, totalling 908 ft. in length, are allotted to the coal and bunker trade, and are equipped with four electric coal transporters.

(*Continued on page* 690)

Passenger train hauled by 2-8-2 *tender locomotive; engines of this type have been delivered by the North British Locomotive Co. Ltd. for service on light track*

British Railways Third Class Stock

Corridor third class, baggage and brake of all-steel construction and of standard design

THE first of an order for 44 corridor third class and brake carriages built to British Railways standard design has recently been completed by Charles Roberts & Co. Ltd., Horbury Junction, Wakefield. The principal dimensions are as given in our March 16, 1951, issue, which also gives particulars of the standard type bogies and underframes, which are designed to withstand buffing loads of 200 tons.

The body is constructed of pressed-steel members, the principal ones being a "top hat" section. The body side is a continuous radius from the floor to the cant rail, and to enable flat glass windows to be fitted, the outer steel panels are pressed flat around the window openings. The floor in the compartments and corridor is built of pressed-steel bearers and very thick plywood and is covered with mottled green linoleum, but in the luggage compartment the floor is made of a 2-in. thick bituminous compound laid on galvanised-steel dovetailed flooring sheets. The roof is constructed of galvanised-steel sheets carried on pressed-steel carlines. Special attention has been paid to preserve the bodies from rust and all the inside steel work is thickly coated with a preservative compound.

Interior Design

The luggage compartment is arranged to carry 2½ tons of luggage and is provided with four double luggage doors. A wire screen is built to form the corridor, and passengers have no access to the luggage compartment when passing through the vehicle. This compartment is 22 ft. 8 in. long × 6 ft. 3 in. wide.

The guard's compartment is 6 ft. 9 in. long × 5 ft. 10 in. and is fitted with a vacuum brake valve and gauge, letter rack, desk, table, heating pipes, swivelling chair, ticket collector's seat, food warmer, and so on, together with fire-fighting equipment and ambulance box. There are also two periscopes to enable the guard to see along the top of the train in both directions. The train lighting control is also placed in this compartment.

The seating in the passenger compartments is arranged for three a side with arm rests, or four a side when the arm rests are lifted.

Sliding Ventilators

There is a 4-ft. wide body side window with a sliding ventilator, and the corridor partition is provided with two windows. The sliding door, which is fitted with a drop light, is shrouded with bristle-type draught excluders. All the windows and the door have green Vynide blinds to exclude excessive sunlight. Anti-fire precautions have been included underneath the seats.

Two steam heaters are provided in each compartment and the control for the heaters is placed on the body side panels inside each compartment.

The electric lighting comprises two roof lights (with a dim and bright control switch) and four shoulder lights with pleasing plastic shades. There are two plain mirrors.

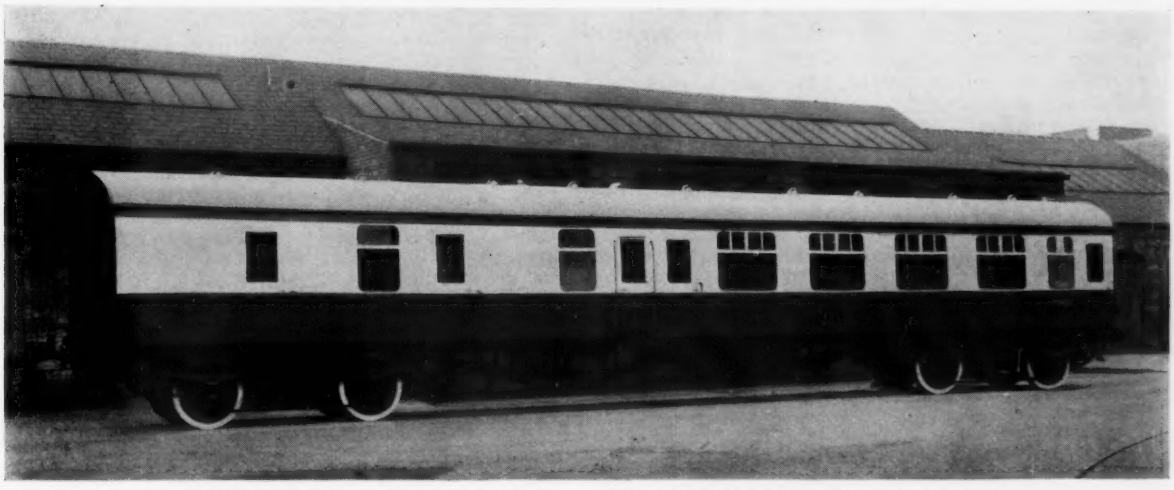
The ceiling panels are of ivory plastic, while the timber framing is Lagos mahogany with panels of lacewood. The seats are covered with red and grey patterned cut moquette and the floor is green mottled lino. The metallic fittings are finished in matt chrome plating.

The toilet compartment is finished in yellow Finaweave plastic panels with a tiled floor of terra cotta shade. Neat aluminium moulds cover all the panel joints and the water sealed hopper and pedestal wash basin are in primrose yellow. Hot and cold water is available and liquid soap is supplied from a dispensing unit concealed behind the panelling.

Louvre Vents

Louvre vents are provided in addition to the ceiling ventilators and heating is provided by a wall radiator covered by a flush fitting ornamental grille. Frameless mirrors, illuminated by wall lights, trinket trays, coat hooks and towel racks are provided. The window and door are surrounded by Lagos mahogany mouldings and the metallic furniture is matt chrome plated.

The outside of the car is finished in the livery of British Railways, while the interior of the passenger compartments and the light shade mahogany corridor are finished in matt varnish. All the outside passenger doors are fitted with drop windows and outside actuation locks, and each end of the car has a Pullman type gangway.



British Railways corridor third class, baggage and brake built by Charles Roberts & Co. Ltd.

NEW OFFICES FOR POLLOCK BROWN & COMPANY.—The new offices for Pollock Brown & Co. Ltd., one of the "600" group of companies, were opened recently by Mr. Harold G. Cohen, the Chairman of the company and a director of George Cohen Sons & Co. Ltd., the parent company. The new building replaces offices which were partially destroyed by enemy action in 1941; it stands at the entrance to the company's premises at Northam, Southampton, one of the largest scrap-yards in the country.

Victorian Railways Royal Train

Rolling stock to be used for day and night journeys during the Royal tour

Dining saloon and lounge in Viceregal car

THE train in which the Queen and the Duke of Edinburgh will travel during their tour of the State of Victoria will consist of a Viceregal car, dining car, State car, special staff car, three sitting cars, and baggage van. The stock will be finished in royal blue and gold to match the livery of the diesel-locomotives which will haul the train.

Much thought has been given to the design of the Viceregal car to ensure the maximum of comfort, and which will comprise a kitchen, saloon with buffet, two staterooms, each with its own bathroom, two staff rooms, and a shower room.

The car is air-conditioned, and has fluorescent lighting which gives a subdued effect on the pastel shade ceilings.

An outstanding feature of this car is the kitchen compartment in which full advantage has been taken of the space available; stainless steel cupboards are provided for the storage of utensils, all of which are secured to prevent noise. Glass cabinets have also been designed with the object of preventing damage to glassware while the train is in motion.

A slow combustion stove is fuelled with briquettes, and provides the hot water for the 60-gal. storage tanks. The stove besides cooking provides hot water for the bathrooms, showers, hot press, and kitchen sinks. An electric refrigerator of 21 cu. ft. capacity is fitted in the kitchen, as is also a filter for drinking water. Provision is also made for an electric toaster. Other kitchen equipment includes an ironing board and serving table, both firmly secured to a partition.

Combined Saloon and Buffet

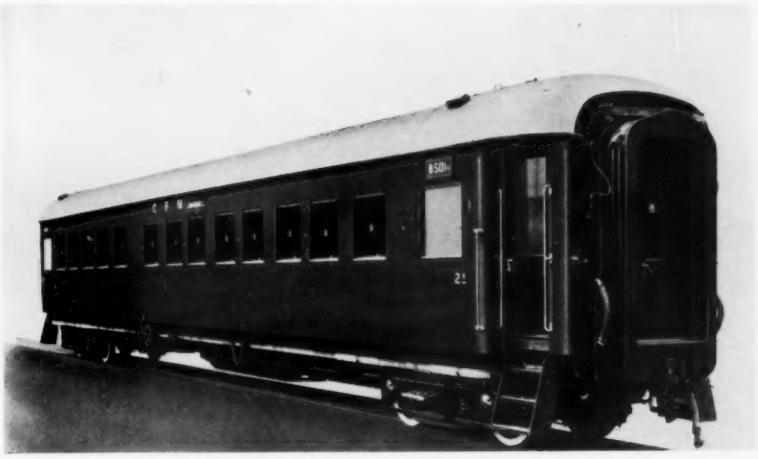
The combined saloon and buffet compartment has a fitted mushroom-coloured carpet, while the furnishings are in rose-coloured velvet. The compartment is panelled in Queensland silkwood, and the furniture includes easy chairs, four green upholstered chairs, a drop side-table, and a built-in buffet. Steps have been taken to eliminate noise as far as possible.

The two staterooms are panelled in silver ash. A single bed with overhead reading lamp and folding shelf, a dressing table, chair, and built-in wardrobes are provided. The equipment in the bathrooms includes high-pressure, flexible-tube showers, and a special shampoo shower which is fitted above the porcelain washbasin. The bathrooms are finished in cream.

(Left) The Queen's bedroom, and (right) the Duke of Edinburgh's bedroom, in the Viceregal car

All-Steel Passenger Stock for Mozambique Railways

Second class corridor coaches for Beira system



Second class all-steel coach built by the Metropolitan-Cammell Carriage & Wagon Co. Ltd

AMONG the orders recently completed by the Metropolitan-Cammell Carriage & Wagon Co. Ltd. are eight second class corridor carriages for the Beira system of the Mozambique Railways. This system, one of the five of which the Mozambique Railways are composed, carries a heavy traffic, as it forms part of the outlet from the Rhodesia and Nyasaland Railways to the coast. The carriages are of all-steel construction and seating is provided for 39 passengers. The principal dimensions are as follow:—

Length over vestibule end panels	63 ft. 5 7/8 in.
Width over body side panels ...	9 ft. 3 7/8 in.
Height over roof sheets ...	12 ft. 6 1/4 in.
Gauge	3 ft. 6 in.
Tare weight	38 tons 8 cwt. 3 qrs.

Bogie Design

The bogies are of the equalising beam type with a two-stage suspension, one stage incorporating large spiral springs, the other leaf springs of the elliptical type with a swing bolster. The equalising beam is mounted over roller-bearing axleboxes of British Timken manufacture. The bogie frame is of riveted construction comprising rolled steel sections and steel plates. The wheels are rolled steel disc type 2 ft. 10 in. dia. on tread and the wheelbase is 6 ft. 6 in. Inside and outside brake blocks act on all wheels.

The underframe is of riveted construction dispensing with truss rods, but braced by the continuous girder formed by the body sides. Ample space is thereby provided on the frame for the brakegear, electrical equipment, and water storage tanks. The brakegear comprises the automatic vacuum brake together with a handbrake actuated by a handwheel and shaft on each side of the frame for parking purposes. Automatic Visco Alliance No. 2 centre couplers are fitted.

Copper Bearing Steel

The carriage bodies are of all-steel construction and built of channel and angle sections and steel panels riveted together to form a continuous girder. A smooth exterior is obtained by eliminating mouldings and butt-welding the side panels at their joints.

The outside sheeting of copper-bearing steel panels 3/32 in. thick are riveted to the framing with rivets countersunk on the outside, which, together with the welded joints, are ground smooth and level with the panelling. The plain elliptical roofs are of 1/16 in. thick copper-bearing steel panels riveted to angle section framing members. Insulation for the bodies is obtained by spraying Limpet asbestos on to the inside of the panels for a thickness of 1 in. down to the waist rails and 1/2 in. thickness below.

The floors are of galvanised keystone corrugated steel sheets to which is cemented a layer of slab cork, and one of 1/16-in. felt, being finally covered with linoleum. Access to the interior of the carriage is by fixed steps and side doorways provided in the enclosed vestibules and telescopic gangways provide passage to all carriages when coupled together, A through corridor gives access to the five full and three coupé compartments.

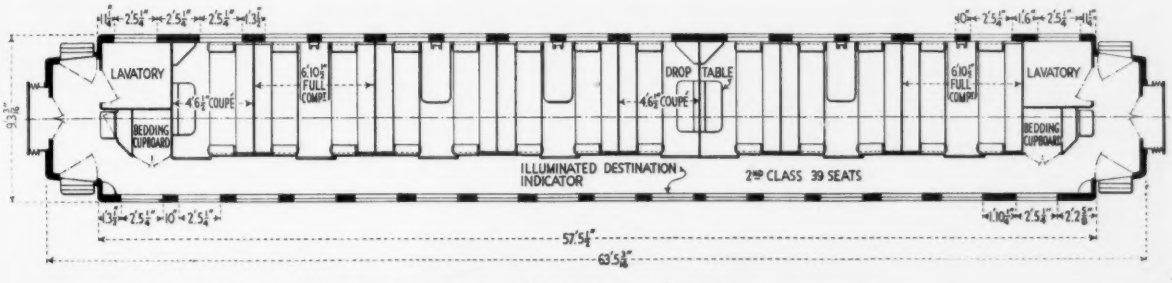
Interior Arrangements

There are three sleeping berths on both cross partitions of the full compartments, and on one cross partition of each of the coupé compartments. The bottom berths are fixed and form seats, and the top and middle berths fold flat against the cross partitions in daytime, the latter forming the back rests for the seats. All berths are trimmed in green hide on spring foundations of Vi-Spring Products Limited manufacture.

Dado panels in all compartments are trimmed in green rexine and the cross partitions below the cornice together with the lower portion of the longitudinal partitions are trimmed in green rexine laid on 1/8-in. felt. The interior panelling elsewhere is mainly of plywood with African mahogany veneers finished in colourless french polish. The ceilings are finished in eggshell white enamel. Alcoves above the windows are provided for light articles and folding trinket trays are recessed into the cross partitions above the berths for use at night.

Steam Heated Radiators

Between the seats and attached to the bodyside of full compartments there is a combined washbasin, in whitemetal, and folding table. When not in use the table folds upwards against the bodyside



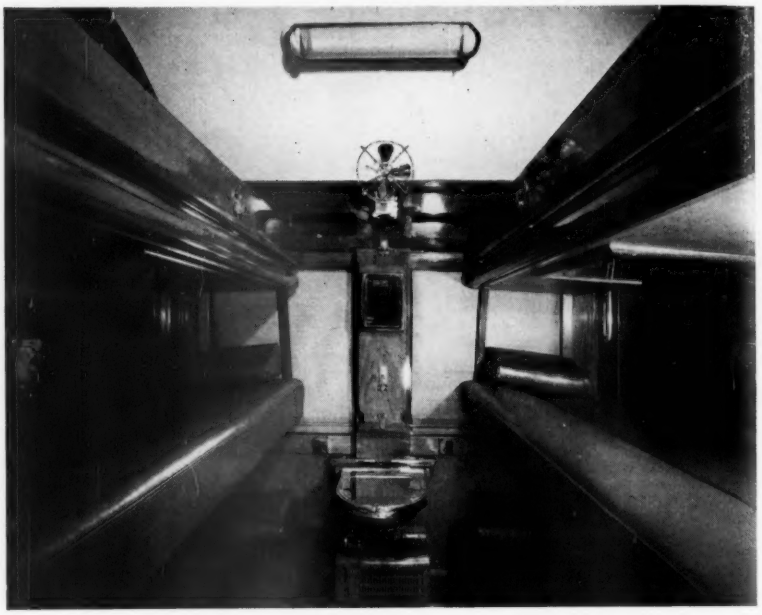
Plan showing principal dimensions and seating arrangements

exposing the washbasin lid, this lid also serves as a small table. A folding corner washbasin is mounted in the coupé compartments underneath the corner cupboard, with the hinged table attached to the cross partition. Steam-heated radiators, passenger controlled, are mounted on the body sides of all compartments.

Dressing mirrors are fitted in the compartment doors and on the upper berths and corner cupboard doors in coupé compartments. By extending the compartment ceilings over the corridor ceiling, space has been provided for the stowage of passengers light luggage. The window openings in corridor, full and coupé compartments, are fitted with drop lights controlled by Rawlings Manufacturing Co. Ltd. Improved Sturdy Major balances, to the outside, with louvre frames faced with mosquito gauze to the inside and fitted in addition in the full and coupé compartments, are pinch-type spring roller blinds.

Lavatory Arrangements

Lavatories are arranged at the ends of the carriages and are equipped with commode, corner porcelain washbasin and so on, the metallic fittings being chromium plated. The walls of the lavatory are lined with plastic panelling with anodised aluminium mouldings. The window openings are fitted with balanced drop lights only, having a limited fall of 3 in. The ventilation of lavatories and all compartments is provided by M & M Monsoon type roof ventilators. Some 500 gallons of water for service requirements are stored in tanks in the underframe and roof: semi-rotary pumps being arranged in the lavatories for re-filling the roof tanks.



Interior of the six-berth compartment arranged for night use

Electrical Equipment

The electric lighting equipment is by J. Stone & Co. (Deptford) Ltd. The generator and storage batteries provides the direct current for the small number of incandescent lamps, the compartment bracket fans, and also its electric bell equipment. A motor alternator connected across the storage battery provides alternating current for the main fluorescent ceiling lights and berth lights.

The main switch and fuse panel is housed at one end of the carriage and intercoach couplings of the R.C.H. type are fitted on the end vestibules for supplying or receiving the current for incandesecent lights in emergency. The finish of the exterior is carried out in maroon Dulux, and the roof sheets in aluminium paint.

The principal sub-contractors for the equipment are:—

Wheels and axles ...	Taylor Bros. & Co. Ltd.
Axleboxes	British Timken Limited
Springs	English Steel Corporation Limited
Vacuum brake equipment	Westinghouse Brake & Signal Co. Ltd.
Lighting	J. Stone & Co. (Deptford) Ltd.
Glass	Pilkington Bros. Ltd.
Berth spring foundation frames	Vi-Spring Products Limited
Balanced windows ...	Rawlings Manufacturing Co. Ltd.

The coupé compartment as arranged for day travel

Improving the Sudan Railways

(*Concluded from page* 686)

During 1952, 1,084 ships, representing nearly 3,500,000 net registered tons, called at Port Sudan.

For the professional and technical posts on the railways, Sudanese with adequate basic education and experience are carefully selected for special training in the United Kingdom. Courses extend to two or three years after further practical experience in the Sudan Railways, those of proven capability are promoted to Division I or Division II posts to replace expatriates as vacancies arise.

RAILWAY NEWS SECTION

PERSONAL

Mr. W. J. Phillipson and Mr. B. H. Harbour have been appointed to fill the vacancies on the Committee of the Institute of Transport caused by the resignation of Mr. Ormerod and Mr. D. McKenna.

Sir Archibald J. Boyd, who has been Chairman of the Railway Carriage & Wagon Building Association for the past twenty-four years, has resigned that position and has been succeeded by Mr. H. N. Edwards, whose appointment as Managing Director of the Metropolitan-Cammell Carriage & Wagon Co. Ltd. on January 1, 1954, was recorded in our October 30 issue.

The Rt. Hon. Alan Lennox-Boyd, M.P., has appointed Mr. W. J. Price, a representative of industry, to be a member of the Transport Users' Consultative Committee for the Yorkshire Area.

Mr. Edward W. Arkle, Commercial Superintendent, North-Eastern Region, British Railways, has been appointed Commercial Superintendent, London Midland Region, British Railways. He takes up his new position at Euston on January 1.

We regret to record the death on December 9, at the age of 63, of Mr. David Williams, V.D., late of the Indian State Railways.

We regret to record the death in London of Mr. John Richard Matthew, who retired from the service of the General Roca Railway, Argentina, in 1948. Mr. Matthew occupied among other posts those of District Engineer at Empalme Lobos, Bahia Blanca, and Cipolletti.

Mr. J. S. Nicholl, C.B.E., M.Inst.T., is to retire at the end of the year from the service of the British Transport Commission having been Chief Officer (Research and Charges) on the Road Haulage Executive.

We regret to record the death of Mr. William Murray, a former Rail Traffic Manager in South Wales under Powell Duffryn Limited.

We regret to record the death, at the age of 78, of Sir Arthur Winder, Director & General Manager of the English Steel Corporation from 1934 to 1944, and also a former Director of Vickers Armstrongs Limited.

Mr. Ko Ko Gyi, Assistant Traffic Superintendent, Burma Railways, arrived in the United Kingdom on December 4 on a three months' British Council bursary. He is studying railway operation, establishment and organisation, publicity and public relations work, railway law, economics and statistics.

We regret to record the death, at the age of 89, of Mr. Walter Henry Hyde, General Manager of the Great Eastern Railway from 1910 to 1914. Mr. Hyde commenced his railway career in the Secretary's Department in 1877. Three years later he was transferred to the Accountant's Department, and, in 1897, he became Chief Accountant, becoming, at the age of 32, the youngest officer in the service at that time. In 1903, Mr. Hyde was appointed to the position of Assistant to the General Manager, and, during the seven years which elapsed between that time and his succession to the General Managership he was frequently called upon to represent the General Manager at the Railway Clearing House General Manager's Conference. In 1905, together with the then Continental Traffic Manager, Mr. C. Busk, he represented the company at the International Railway Congress at Washington, extending the visit to tour various portions of the United States in order to make a close study of railway working and conditions at New York, Philadelphia, Altoona, Cincinnati, St. Louis, Chicago, Boston, Montreal and Quebec. During this period Mr. Hyde conducted lectures on railway accounts at the London School of Economics (1904-05). He was a member of Sub-Committee A of the Board of Trade Railway Conference of 1908-09. When he assumed the General Managership on January 28, 1910, he had some 31 years of general railway experience. In 1910, Mr. Hyde, together with other railway officers, represented the Great Eastern Railway Company at the International Railway Conference at Berne. He gave evidence before the Railway & Canal Commission on the Railway Conciliation Scheme in 1911; and before the Parliamentary Committee on the Greater London Railway Bill of the same year. He was a member of the War Railway Council, and held the rank of lieutenant-colonel in the Engineer & Railway Staff Corps. He was also a Freeman of the City of London. Mr. Hyde was keenly interested in the Great Eastern Railway Musical Society, of which he was a Vice-President. He was also a member of the choir. For some years he was a member of the Woodford Urban District Council, a Vice-Chairman of that body, and Vice-Chairman of the Waltham Joint Hospital Board.

The late Mr. W. H. Hyde
General Manager, Great Eastern Railway, 1910-14

The following changes in the Directorate of Thos. W. Ward Limited have been announced:—

Mr. George Wood, C.B.E., Chairman, retires from that office as from January 1, 1954, and, in recognition of his long service with the firm he has been appointed Vice-President. He will remain a Director. Mr. Wood is a Director of a number of subsidiary and associated companies, and has been Director of Scrap Iron & Steel Supplies in Iron & Steel Control during the last war. He is Director of British Iron & Steel Corporation (Salvage) Limited.

Mr. Wood will be succeeded by Mr. Harold W. Secker, O.B.E., Joint Managing Director. He has twice been President of the Yorkshire Scrap Iron, Steel & Metals Association, and he has filled practically every office in the National Federation of Scrap Iron, Steel & Metal Merchants, of which he was President in 1948-49. He is also Chairman of the employers' side of the Joint Conciliation Committee for the Scrap Iron and Steel Industry. Mr. Secker is a Director of Parkgate Iron & Steel Co. Ltd., and a number of companies in the Thos. W. Ward Group, including Darlington Railway Plant & Foundry Co. Ltd., Marshall, Sons & Co. Ltd., John Williams (Wishaw) Limited, Widnes Foundry & Engineering Co. Ltd., Thos. W. Ward (Belgium) S.A. and Thos. W. Ward (India) Limited. He was a Director of Scrap Supplies for the Iron & Steel Control from 1942 until it ceased to function, when he was appointed Advisor on Scrap Materials to the Iron & Steel Board, and eventually to a similar position with the Ministry of Supply—Iron & Steel Division—which he still occupies.

Mr. Arnold Carr, who was in charge of the company's London operations before his return to Sheffield in 1950, has been appointed Assistant Managing Director. Also appointed to the board is Mr. Rawson F. Stagg, who has been a local director since 1947.

Mr. A. H. Madden

Appointed Divisional Motive Power Superintendent, Derby, London Midland Region

Mr. E. A. Ryder

Appointed Assistant General Freight Traffic Manager, Canadian National Railways

Mr. H. Merz

Appointed Manager, Lucerne Division, Swiss Federal Railways

Mr. A. H. Madden, A.M.I.Loco.E., A.M.Inst.T., Divisional Motive Power Superintendent (Central Division) Manchester, London Midland Region, British Railways, who, as recorded in our December 4 issue, has been appointed Divisional Motive Power Superintendent, Derby, was educated at Campbell College, Belfast. He served his apprenticeship in the shops of the Northern Counties Committee at Belfast from 1920 to 1925, and for the next two years was employed in the drawing office and Running Department. In 1927 he became an improver on probation, and two years later went to Hellifield Motive Power Depot as Running Shed Foreman. In 1931 he was made Head Office Mechanical Inspector at Derby, and held that position for three years, during which period he was employed also on relief duties on the Midland Division of the L.M.S.R. Mr. Madden was Assistant in the Office of the Divisional Superintendent of Operation, first at Manchester (1935-39) and then at Crewe (1939-40), after which he was District Locomotive Superintendent at Bank Hall (1940-41), and at Accrington (1941-43). He was appointed Assistant to Operating Manager (Motive Power), Glasgow, in 1943; Assistant Dictrict Operating Manager, Leeds in 1945: District Operating Manager, Wakefield, in 1946; and Assistant Divisional Operating Manager, Manchester at the beginning of 1948. The same year he became Divisional Motive Power Superintendent (Central Division) Manchester which appointment he now leaves for his new post.

Mr. E. A. Ryder, Freight Traffic Manager, Central Region, Canadian National Railways, who, as recorded in our December 11 issue, has been appointed Assistant General Freight Traffic Manager of the System, is a native of Havelock, N.B. He served with the Canadian Forces in the 1914-18 war and, on demobilisation, he joined the operating department of the railway in 1920, serving at Moncton and Newcastle. He transferred to Montreal in 1924 and served successively in the Rate & Tariff Bureau, Foreign Freight Department and the office of the General Freight Traffic Manager. In 1938 Mr. Ryder became Chief Clerk to the Vice-President in charge of traffic; in 1944, Assistant to the General Freight Traffic Manager; in 1946, Assistant to the Traffic Vice-President and, in 1949, Traffic Manager, Atlantic Region, Moncton. He was appointed Freight Traffic Manager of the Central Region at Toronto in 1951. He is a member of the Canadian Railway Club, Mount Stephen Club, Canadian Legion (Vimy Branch), a past president of the Traffic Club, Montreal, a member of the National and Toronto Railway clubs and Board of Trade, Toronto, the Hamilton and Sarnia Traffic Clubs and of the Traffic Advisory Council of LaSalle Extension University.

Mr. J. G. Stuart, B.Sc., has been appointed Lecturer in Civil Engineering (Soil Mechanics) at Belfast University.

Mr. W. A. Archer has been appointed Welfare Officer of Thos. Cook & Son Ltd. He has been with the company for 33 years.

Mr. J. R. Harding, B.Sc. (Eng.), M.I.E.E., has been appointed Assistant General Manager of Pirelli-General Cable Works Limited.

Mr. H. Merz, Chief Officer (Construction & Maintenance of Way), Lucerne Division, Swiss Federal Railways, who, as recorded in our September 25 issue, has been appointed Manager of that Division with effect from January 1, 1954, was born in 1903. After graduating in 1928 at the Zürich Polytechnic and serving with engineering firms at Berne, Mr. Merz joined the Swiss Federal Railways in 1930. His first appointment was in connection with the construction of the marshalling yard at the Muttenzerfeld, near Basle. In 1946 he became Engineer of Permanent Way Maintenance at Goldau, being appointed Departmental Chief for underground workings, Lucerne, in 1946. His appointment as Chief of the Superstructure Section, Berne, came in 1947, and, in 1948, he became Assistant to Mr. Wichser, Chief Engineer. After two months in this capacity, he was recalled to Lucerne to take up the post he now vacates, that of Chief Officer (Construction & Maintenance of Way), Lucerne Division. Since January 1, 1953, he has also been Deputy Manager at Lucerne. Mr. Merz holds the military rank of Lieutenant-Colonel and is second-in-command of the Second Operating Group.

Mr. George Stiven, District Passenger Agent, Winnipeg, Canadian National Railways, who has been appointed General Passenger Agent of the Atlantic Region of the system, with headquarters at Moncton, N.B., is a native of Tillicoultry, Scotland. He entered railway service at Moncton as a clerk in 1917, becoming Secretary to the Traffic Manager, Atlantic Region, in 1923. In 1926 he was appointed Secretary to the General Traffic Manager in Montreal, and later Secretary to the Vice-President, Traffic. He became Chief Clerk to the Assistant Traffic Vice-President in 1930. Six years later Mr. Stiven was transferred to Toronto as Terminal Passenger Agent, and, in 1942, he was appointed City Passenger and Ticket Agent at Windsor, Ontario. He became District Passenger Agent at Winnipeg in 1952, retaining that position until his recent appointment.

Mr. R. Ellis, a member of the engineering staff of Leyland Motors Limited, has been appointed Technical Sales representative of the company.

Mr. L. D. Watson has been appointed Deputy Managing Director of the Weyburn Engineering Co. Ltd., and Mr. J. W. Scruby has been appointed Financial Director.

Mr. C. A. Lee, who for many years has been in charge of the contractors' plant division of Thos. W. Ward Limited, and a local Director since 1941, is retiring at the end of the year because of ill-health.

Mr. Vaughan Pendred, Sales Director, Head, Wrightson & Co. Ltd., is leaving early in January for an extended tour of India. This is being undertaken with Mr. M. H. Jenks from the Calcutta Office of Balmer Lawrie & Co. Ltd., whom Head Wrightson & Co. Ltd., have just appointed as their Selling Agents in India.

Ministry of Transport Accident Report

Gollanfield Junction: June 9, 1953,
British Railways, Scottish Region

Colonel D. McMullen, Inspecting Officer of Railways, Ministry of Transport, inquired into the accident which occurred at about 8.34 p.m. on June 9, 1953, at Gollanfield Junction, when the 5.45 p.m. unfitted freight train, Keith to Inverness, consisting of 39 goods vehicles and a 20 ton brake van drawn by a class "C" mixed traffic 4-6-0 engine, which had vacuum operated steam brake on coupled and tender wheels, overran the station, the driver having failed to control his speed and been misled by the irregular premature clearing of the home signal, and collided at a speed of 45 to 50 m.p.h. about 150 yd. beyond the facing points with the 8.17 p.m. stopping passenger train, Inverness to Keith, consisting of four coaches, drawn by a class "3" 4-4-0 tender engine, approaching the home signal at danger at 15 to 20 m.p.h.

The passenger train engine became a tangled mass of metal and the other one was wrecked beyond repair. A considerable amount of other damage was done, suggesting a combined speed on collision of some 60 to 70 m.p.h. Both drivers and the fireman of the passenger train were killed, but the fireman of the freight train jumped out, suffering severely from shock and bruises. There were only three passengers, one of whom, a railway fireman travelling home, was seriously injured. The two firemen had to be taken to hospital; the one off the freight train was discharged shortly afterwards. It was fine but cloudy, with dry rails, and broad daylight. The accompanying diagram shows the lines, signals, etc., essential to an understanding of the case.

Regulations

The former L.M.S.R. Company's single line train signalling regulations are still in force on this section and prescribe that "when trains which have to cross each other are approaching a token station in opposite directions, the signals in both directions must be kept at danger and when the train which has first to be allowed to draw forward has been brought to a stand, the home signal applicable to such train may be taken off to allow it to draw forward to the station or to the starting signal, and after it has again come to a stand and the signalman has ascertained that the line on which the other train will arrive is clear, the necessary signals for that train may be taken off."

The equivalent regulation of the former L.N.E.R. permits the signalman to lower the home signal for the first train when it has come *nearly* to a stand and this is still in force on adjacent sections once owned by that company. Rule 39(*a*) from the British Railways Rule Book reads: "When a stop signal is at danger the stop signal next in rear of it and worked from the same signal box must not be lowered for an approaching train until the train is close to such signal and has been brought quite or nearly, to a stand," and also is relevant to this case.

Course of Events and Evidence

The passenger train ran for the first time on the previous day in the summer timetable and was due at 8.34. It was under control, ready to stop at the home signal. The freight train, due to leave Forres at 9.10, actually did so at 7.55, and left Nairn at 8.22 after attaching 20 wagons. Shock had rendered the recollection of its fireman hazy but apparently he wished to convey that he exchanged tablets by hand at Nairn and the run to Gollanfield was rather faster than usual. He put the tablet in a pouch on the catcher on the driver's left-hand side and saw the distant signal was against them. He told the driver, thinking he had not seen it, who shut the regulator and applied the brake just after passing the signal. When he first saw the home signal it was at clear.

The driver's action did not appear to reduce the speed until the platform and then only slightly, where he observed that no token exchange took place. He did not see the starting signal but noticed the other train as they passed the trailing points. He told the driver he would not be able to stop and jumped off. Up to then, he thought, the driver had made no serious attempt to stop, not having used sand, reversed, or applied or asked for the hand brake. Nor had he whistled for brakes.

The fireman was unaware of the running of the passenger train and did not know whether the driver knew about it. It was his first trip with him and he had appeared normal. He himself had not been on the section for some time.

The guard thought the speed higher than usual after Nairn and as it did not slacken approaching the level crossing, about 1¼ miles from the station, he applied his brake. He knew he was to cross the passenger train at Gollanfield. Seeing the distant signal "on" he screwed his brake on hard. He expected there would be a collision. He saw the home signal go back to danger as the engine passed; it appeared to be pulling the whole time. Speed slackened little before the collision.

The signalman at Nairn asked the fireman how long they would take to Gollanfield, who replied, after consulting the driver, "Ten minutes." He told Gollanfield and the train was accepted. He thought the driver would appreciate his question was in connection with the crossing with the passenger train. There was a 27 min. margin ahead of the next following train.

The Gollanfield signalman said he accepted the freight train after receiving certain information about it and the driver's assurance on running time. He locked both facing points but kept his signals at danger. He accepted the passenger train simultaneously with the freight. Seeing the latter coming through the bridge he looked for the former but could not see it; neither did he hear it whistle. When the freight train was fully half way between distant and home signals he thought it to be under proper control and lowered the home. Realising, however, that the train was travelling too fast he put it back to danger, trying, unsuccessfully, to attract the driver's attention. He unlocked and reversed the far end points to prevent a burst. All he could say about speed was that the train was "going pretty fast." On the straight line approach trains often appeared to be travelling more slowly than they were. He heard no couplings coming together, as if the driver were braking hard. He thought Rule 39 (*a*) permitted the home signal to be lowered when a train had come nearly to a stand and considered it to conflict with the block regulations but had not asked for

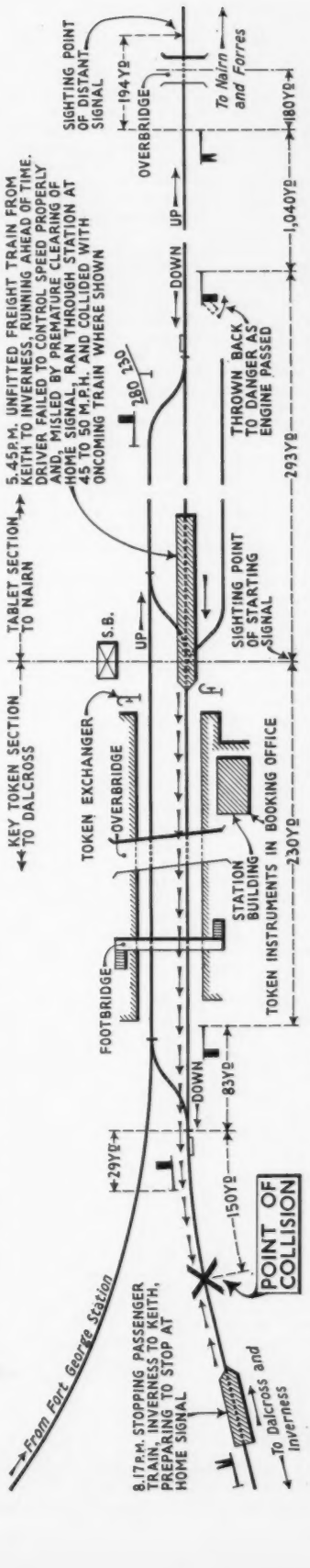

SIGHTING POINT OF DISTANT SIGNAL
194YD
OVERBRIDGE
To Nairn and Forres
180YD
5.45 P.M. UNFITTED FREIGHT TRAIN FROM KEITH TO INVERNESS, RUNNING AHEAD OF TIME. DRIVER FAILED TO CONTROL SPEED PROPERLY AND, MISLED BY PREMATURE CLEARING OF HOME SIGNAL, RAN THROUGH STATION AT 45 TO 50 M.P.H. AND COLLIDED WITH ONCOMING TRAIN WHERE SHOWN
UP
DOWN
180
130
THROWN BACK TO DANGER AS ENGINE PASSED
1,040YD
293YD
TABLET SECTION TO NAIRN
S.B.
SIGHTING POINT OF STARTING SIGNAL
KEY TOKEN SECTION TO DALCROSS
TOKEN EXCHANGER
OVERBRIDGE
STATION BUILDING
TOKEN INSTRUMENTS IN BOOKING OFFICE
230YD
FOOTBRIDGE
83YD
29YD
150YD
POINT OF COLLISION
From Fort George Station
8.17 P.M. STOPPING PASSENGER TRAIN, INVERNESS TO KEITH, PREPARING TO STOP AT HOME SIGNAL
To Dalcross and Inverness

Diagram showing circumstances of accident at Gollanfield Junction, British Railways, Scottish Region, June 9, 1953

that to be clarified. He usually so acted and thought the inspector who examined him said he could.

In February, 1953, a circular—reproduced in the report—was issued directing attention to various signalling irregularities that had come to light, among them failures to keep signals correctly at danger when crossing trains were approaching. This signalman admitted he had read it, probably on the station notices board. He did not think anyone had drawn his attention to any part of it. Aged 49, he qualified as porter signalman in 1944 and had spent most of his time at Gollanfield.

The stationmaster also thought one of the home signals might be lowered when a train had come nearly to a stand. He believed he had drawn the special attention of the staff to the circular and said to the signalman "they are getting more strict in the rules." To his mind there was confliction between Rule 39 (*a*) and the single line regulations, and if there was sufficient margin between the arrival times of crossing trains the home signal might be lowered for the first one when nearly stopped. He said this, notwithstanding that he was examined between two occasions of giving evidence before Colonel McMullen. He is 52 and joined the L.M.S.R. in 1919, became signalman in 1922 and stationmaster in 1938. He had been at Gollanfield since 1946.

The stationmaster at Aviemore had been district inspector at Inverness till April, 1953, and said he examined the Gollanfield signalman in January, 1952, and—as always—made a point of asking questions on the single line regulations, particularly those concerning crossing trains. He had never heard it suggested that Rule 39(*a*) could be applied to the first of two such trains. He knew the rules of the former companies to differ somewhat. Signalmen from the old L.N.E.R. lines sometimes were transferred to former L.M.S.R. boxes, but he had not examined any such.

The present district inspector at Inverness had only examined one signalman since his appointment, but in travelling over the district often witnessed trains crossing and had always seen the regulations observed. He referred to a booklet, a copy of which was at Gollanfield, entitled "Railway Block Telegraph Regulations," written by a district inspector and widely read by signalmen.

A former chief district inspector at Inverness said the stationmaster was examined in 1951 and found to have satisfactory knowledge of rules and regulations. He had been on the L.N.E.R. himself and knew there was some disparity between its rules and those of the L.M.S.R.; the latter he, without doubt, preferred as regards the crossing of trains. The present chief district inspector at Inverness only examined men referred to him by the district inspector and had never heard it suggested that Rule 39(*a*) could be applied as mentioned, and had never seen it done.

All the evidence showed that the freight train's speed must have been high. The engine brake handle was found in full application position and the regulator closed. Reversing gear was in the forward coasting position. The tender hand brake appeared not to have been applied. No defective equipment could be found.

Inspecting Officer's Conclusions

The driver had set up the conditions for an accident by approaching the distant signal at a speed which could not have been less than 55 m.p.h., requiring a stopping distance of 2,300 yd. even with full brake power; this would cause the train to overshoot the facing points by some 500 yd. He did not apply full brake power for the entire distance, releasing the brakes presumably when he saw the home signal was off. He was making a normal application thereafter until the fireman jumped. Probably from the distant signal to the site of the collision speed was not reduced by more than 5 to 10 m.p.h. The driver clearly did not see the home signal put back to danger. There is little doubt that he did not know about the passenger train running or, if he did, he thought it was late. There was no reason, however, for his ignorance of it. Obviously he was expecting to run through Gollanfield or he would not have placed the tablet in its pouch in the exchanger. He may have attributed the Nairn signalman's question to a following train. He had no justification for assuming that he had a clear run through. Probably the clearing of the home signal led him to think "line clear" had been received, but that cannot excuse him. Told the distant signal was "on," he should have reduced speed considerably and been prepared to stop at the home signal. He must have realised that no token exchange had been made, and Colonel McMullen cannot account for his extraordinary action. A bachelor of 55, he had been driving for 10 years and knew the line well. He had had ample rest and was spoken of as a steady worker. His record has been generally clear since 1941; a post-mortem disclosed nothing to account for his failure.

The premature clearing of the home signal must have misled the driver seriously and contributed to the severity of the collision. There was no excuse for it, but Colonel McMullen thinks the signalman genuinely believed he was allowed to clear it when the train was "nearly at a stand." He said it was his usual practice. Colonel McMullen thinks, however, that his assertions concerning what the inspector told him and Rule 39 (*a*) were put forward as an excuse. His belief may have come from reading the booklet mentioned, quoting the L.N.E.R. regulations without saying that those of the L.M.S.R. differ. This work had had a wide circulation. It was surprising to find the stationmaster uncertain about the regulations. He quoted the L.N.E.R. ones and suggested that Rule 39 (*a*) in the British Railways book conflicted with the L.M.S.R. block regulations.

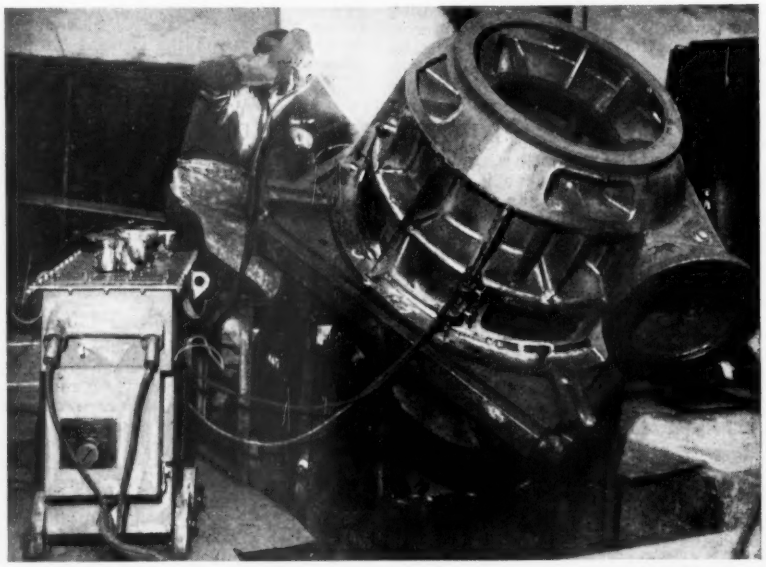
Remarks and Recommendations

Other accidents recently in the Scottish Region have resulted from freight trains travelling at high speed, especially when approaching stations. Expeditious working is desirable, but they should be able to be brought under full control, having regard to gradients, and sighting distance of signals. For many years yet there will be large numbers of freight vehicles not designed for high speed. It is considered that 45 m.p.h. should be the maximum for unfitted trains and Colonel McMullen recommends that this limit be enforced generally.

The difference in the former companies' single line regulations has a bearing on the accident, though indirectly. As staff are now transferred between the lines once belonging to those companies, the regulations should be standardised and preference given to the L.M.S.R. regulation on the crossing of trains. The booklet mentioned was written for L.N.E.R. staff but circulates throughout Scotland. Such publications can be helpful, but it is important they do not come to be regarded as the official rules and regulations.

BRITISH RAILWAYS RECORD COAL TRAFFIC.—Coal carryings on British Railways last week were another record, and at 3,419,470 tons were the highest tonnage for four years. The weekend figure, 437,600 tons, was the highest for two years. During the week ended December 5, 214,288 tons of iron and steel from the principal steel works and 315,000 tons of iron ore were conveyed.

Twin-Arc Welding of Pump Casing



Fabricating a pump casing by the Twin-Arc welding process developed by the Quasi-Arc Co. Ltd. (*See article in our October 23 issue*)

Record Installation of Welded Rail

An installation of continuous welded rail, believed to be the largest ever put into service at one location and enough to construct 112 miles of track, will be used in the construction of the Pennsylvania Railroad new Conway freight classification yard near Pittsburgh.

It is proposed to weld the rail in both the eastward and westward classification yards, the eastward and westward receiving yards, and the eastward and westward advance or departure yards. All track in these yards, exclusive of point and crossing work, will be of welded construction.

Some 36,000 welds will be required as sections of reconditioned rail, which have been reclaimed from heavy main line service but still with many useful years of life for yard service, will be welded together end to end to make long stretches of rail for the yard's 150 tracks. The welding operation, carried on at the site, has been under way for some time in order to build an inventory of rail so as to permit steady progress of installation as track construction proceeds.

Improved Maintenance

It is considered that in a classification yard as large and busy as the new Conway Yard will be when completed, welded rail will permit better maintenance at lower cost.

The new yard, which will have a total cost of $34,200,000, will make possible rerouting over easier grades and speedier movement of much east-west freight traffic, with special benefit for freight moving between St. Louis, Cincinnati, Columbus, and the East, and between Chicago, Fort Wayne, Detroit, Toledo, Cleveland, Pittsburgh, and the East.

The capacity of the yard, located 22 miles west of Pittsburgh, will be more than tripled. When it is completed, 8,000 cars a day can be classified.

INTENT TO OBSTRUCT TRAINS: BOYS ACCUSED.—At Guildford Juvenile Court two eleven-year-old boys admitted maliciously placing on a railway line on October 11 a wooden sleeper with intent to obstruct a four-coach electric train. With another boy, aged 10, they also admitted placing on the line on November 28 a part of a sleeper and stones with intent to obstruct a train. The prosecuting solicitor said it was significant that these offences started after the recent accident at Guildford. It was probable that the boys had some idea of that and from it resolved the idea of wrecking the train. On October 11 the front coach on the 9.20 p.m. train from Waterloo to Portsmouth was lifted from the lines, but fortunately the wheels fell back into place. Part of a sleeper was found with the iron rail wedged in a brake safety mechanism. The boys, he added, were also in great danger of being electrocuted. On November 28 bricks and other articles on the line caused the driver of a Waterloo to Portsmouth train to apply his emergency brakes; he could not stop in time and the train rose from the rails and was saved only by the wheel flanges. One of the cases admitted by the two eleven-year-old boys was placing a red danger flag on the line, causing a main-line train travelling at about 60 m.p.h. to stop. One boy was remanded for psychiatric report and the others were placed on probation.

New Ventilation Works on Northern Line, London Transport

Relief shafts and fans to reduce heat in tunnels

Work is nearing completion on a scheme to improve the ventilation of the southern section of the Northern Line of London Transport. The first requirement was for two additional inter-station fans, of powerful modern type, at Kennington Park and Balham substations. As however, the effect of such new installations by themselves would have been to intensify the velocity of draughts at the nearby Oval and Balham passenger stations, draught relief shafts were sunk at both stations. Both shafts have been completed and one of the new fans installed; a noticeable improvement has been recorded in the overall ventilation, and the force of the draughts has been halved.

Draughts on tube stations arise largely from the movement of the trains themselves, being caused by the piston-like action of a moving train in a closely confined tunnel, and to a lesser degree by fresh air entering the tube to replace vitiated air expelled by the ventilating fans. They are not, in the main, a result of mechanical ventilation, although the temperature of the moving air is affected by the amount and type of forced ventilation provided. Recent extensions of tube lines have been provided as a matter of course with large-diameter relief shafts, between the tunnels and the open air, to reduce the velocity of draughts on platforms, in subways and in escalator tunnels, by providing an easy alternative route for incoming fresh air.

Mechanical ventilation was not, apparently, considered necessary when the City & South London Railway, the first electric tube railway in London, opened in 1890. The tubes at first appeared to offer better conditions than the smoky and "sulphurous" atmosphere of the District and Metropolitan Railway tunnels, with their steam trains, but it was not long before the state of the air in them was being criticised as insanitary and injurious to health. By 1903 the Central London Railway (which also had no provision for mechanical ventilation when it opened in 1900) had installed a fan of 100,000 cu. ft. per minute capacity, at the Wood Lane tunnel mouth. This fan was mainly used at night and, it was claimed could displace in one hour the air of the entire line, then 5¾ miles long from Shepherds Bush to the Bank. When the Bakerloo, Piccadilly and Hampstead tubes opened in 1906-7, they had fans of 20,000 c.f.m. capacity at most stations. In 1911 the Central London Railway equipped most of its stations with small pressure-fans, each arranged to deliver 6,000 c.f.m. of electrically-ozonised air, and so introduced the characteristic smell which was long a feature of London tube railways.

Today, most installation are of the extraction type, in which vitiated air is exhausted by fans to the open air, and a corresponding volume of fresh aid drawn in through station premises, with the result that passengers enter with it and so become gradually accustomed to the unavoidable change in atmospheric conditions from street to tube, although there may be some cold draughts on first entering unless draught relief shafts are provided. A pressure-fan system reverses this process, by forcing warm tunnel air out through station premises, which may lead to complaints of stuffiness on entering. The present ventilation installations provide a capacity sufficient to change the air in the entire tube railway systems three times an hour. There are 98 plants, displacing a total of over 4,500,000 c.f.m.

Thermal Storage in Clay

The main ventilating problem which has grown up over the past thirty years, and was not, therefore, fully envisaged when tube railways were first constructed, arises from the storage of heat in the clay round the tunnels. From about 1920 it was apparent that tube temperatures were slowly and steadily rising, a condition caused by the increasing heat input consequent on more intensive train services, combined with thermal storage in the earth surrounding the tunnels. From time

New fan discharge shaft in Kennington Park concealed by a park shelter

to time, programmes of ventilation improvements were undertaken, with a view to removing more of the heat generated, although the war brought such works temporarily to a halt.

A survey made in 1949 indicated that, whereas the average annual temperature on all tube lines was 73°F., the average at stations on the southern section of the Northern Line, from Kennington southwards, was 76½°; particular "hot spots" were Kennington (77°), Balham (78°) and Oval (78°). The present works have been carried out with the intention both of reducing the temperatures at these particular stations and of lowering the overall temperature throughout the whole section.

Re-designed Waiting Room at York

British Railways, North Eastern Region have re-designed a waiting room at York Station to give it the brightness and comfort of a domestic living room; it was officially brought into use on December 8.

The walls are pale apricot, woodwork French grey, and ceiling pale eau-de-nil

Novel Design of Upholstered Chair

Instead of the previous long wooden seats the room now has 16 chairs. These were designed by Race Furniture Limited of Clapham, and have metal frames finished in a matt grey. They are sturdy, yet take up little space.

The outstanding feature of the chairs is their upholstery. They have foam-rubber seats and arms and are covered in a plum-and-beige shaded basket-weave toughened paper material. The latter is very resistant to hard usage and it is being tried for the first time as a chair covering. It is manufactured by Somic Limited of Preston and was discovered after a long search by Mr. S. W. Jesper, Public Relations & Publicity Officer of the North Eastern Region, who, with Mr. A. Dean, Civil Engineer, is responsible for the innovations.

The design of chair has been influenced by the fact that the waiting room is near to a refreshment room, and passengers will naturally gravitate towards comfort.

On the walls hang seven specially framed pictures. The standard black frame has been replaced by stippled ivory mould with gilt line, or tapped ivory with green line.

"North Wales" by Frank Sherwin is hung, with "The Trossachs" by Jack Merriott, and "Durham" by A. F. Kersting. These are flanked by panel pictures of Laxfield, Suffolk; Richmond, Yorkshire; and Blythburgh, Suffolk, from water colours by F. W. Baldwin, Jack Merriott, and Eric Scott.

In a prominent place, framed in stippled ivory mould with gilt line, is a list of all passenger departures from York.

The room is kept at an even temperature by centrally-heated ceiling panels and a convector gas fire.

The four tables, also by Race Furniture Limited, have polished mahogany tops treated with moisture- and spirit-resisting clear lacquer, and grey tapered steel tubular legs. The floor covering is patterned korkoid.

Above the mirror hangs a painted notice which reads: "We have endeavoured to make this waiting room comfortable and attractive. Will you who use it please help us to keep it so?"

Re-designed waiting room at York, showing chairs upholstered in foam rubber and toughened paper material, new type of tables, and decor scheme

Staff & Labour Matters

Railway Wage Claim

On Saturday night, December 12, the N.U.R. sent telegrams to branches of the union calling members out on strike at midnight on Sunday next, December 20.

This sudden development in the railwaymen's wage claim followed the outright rejection on December 10 by the N.U.R., A.S.L.E.F., and T.S.S.A. of the Railway Staff National Tribunal award of 4s. a week in response to the union's claims for a 15 per cent increase in rates of pay. Later in the day on December 10 leaders of the three railway unions met representatives of the B.T.C. and expressed their intense dissatisfaction with the award both in its inadequacy and the fact that it narrowed the differentials between the pay of skilled and unskilled men.

Offer by B.T.C.

Negotiations between the Commission and the unions continued on December 11, and in an endeavour to meet the union demands the Commission offered to review the whole wage structure and enhance incentives. This offer was made in the following terms:—

"The British Transport Commission has confirmed its acceptance of the award of the Railway Staff National Tribunal for an increase in rates of pay of salaried and conciliation staffs. It is ready to implement it.

If this position is accepted by the trade unions at this time, the Commission is prepared at the earliest opportunity to examine with the trade unions the whole wage and salary structure of the staffs of the railways with a view: (1) To correcting such anomalies as may be found to exist; and (2) to give added incentives in those directions where such a step is proved to be desirable.

"At the same time, the Commission would like to confer with the unions to evolve ways of increasing the efficiency of the railway organisation not only by such adjustments of wages as may result from the examination but by all other appropriate means."

Statement by Sir Brian Robertson

At a further meeting with the unions on December 12 the Chairman of the Commission, Sir Brian Robertson, gave them the following additional assurance:—

"I am prepared to have a preliminary meeting before Christmas. It must not be supposed that this will produce concrete results in the terms of a rise for anyone. But we will start our examination by hearing first the position of those who it is claimed are below the subsistence level, provided you and your colleagues agree—but I cannot undertake to reach any final decisions until the whole scope of the subsequent examination has been reviewed."

The N.U.R. executive committee considered the Commission proposals but felt unable to accept them, and on the evening of December 12, the union sent out the notices calling for strike action.

The General Secretary of the N.U.R., Mr. J. S. Campbell, said that his members, a high proportion of whom were below subsistence level, had expressed disgust with the Tribunal award. They felt there was nothing tangible in the Commission statement and nothing to induce the executive committee to recommend N.U.R. members to accept the proposals.

The T.S.S.A. inclined to the view that as the assurance by the Commission provided that the whole salary structure, including the question of differentials, would be examined, this provided a basis of negotiation. This opinion was confirmed at a meeting of the Association executive on Sunday, December 13 and in these circumstances the executive decided not to join the N.U.R. in strike action.

The A.S.L.E.F. took a similar line to the of T.S.S.A., and the General Secretary, Mr. J. G. Baty, said his executive considered that Commission proposals gave them the opportunity at last to pay due attention to the present anomalies in the railway wages and salaries structure.

On Monday, December 14, the Commission discussed the situation arising from

the threatened strike action by the N.U.R. and afterwards Sir Brian Robertson reported on the position to Sir Walter Monckton. Meanwhile telegrams were sent out by the N.U.R. headquarters calling its members employed by London Transport to join in the strike. The wages of London Transport railwaymen are the subject of separate negotiations.

Later in the day Sir Walter Monckton told the House of Commons that he had asked the leaders of the three railway unions and representatives of the B.T.C. to meet him so that he might be fully informed at first hand.

Mediation by Minister of Labour

The Minister was asked if he would offer the immediate services from his own ministry, and if necessary his own personal services, so as to reach an early settlement. He replied that if further talks with the parties to the dispute were necessary he would certainly have them. In answer to a question as to whether he would go to the meeting prepared to give the Commission a direction to come "to a just settlement of the just demands of these men," Sir Walter Monckton said he thought it was his duty to go to the meeting without expressing opinions in the House or elsewhere.

Statement by Prime Minister

The Prime Minister, Sir Winston Churchill, issued a statement saying that he had asked the Cabinet to hold itself in readiness to meet if necessary to receive a report from the Minister of Labour.

A statement issued on Monday evening said: "A special meeting of the Cabinet was held this evening to review the latest developments in the railway wages dispute. The Minister of Labour reported on the course of the discussions with the British Transport Commission and the trade unions concerned. These discussions will be continued to-morrow. Further meetings of the Cabinet will be held as necessary. The Minister of Transport and the Minister of Fuel who are not members of the Cabinet were present at the meeting."

Speaking of the talks with the Minister of Labour, the President of the N.U.R., Mr. H. W. Franklin, said that Sir Walter Monckton has been most helpful, but so far as his union was concerned the strike would go on.

A meeting of the trade union side of the Railway Shopmen's National Council was arranged for December 15, on which the C.S.E.U. besides the N.U.R. were represented. It was stated that the meeting had been arranged so that the position might be explained to the employees' side of the Council, and to ensure that there was a complete stoppage in railway workshops next week.

As we went to press further discussions were proceeding. Sir Walter Monckton on December 15 held a meeting with Sir Brian Robertson and other representatives of the B.T.C., and afterwards reported the position to the Cabinet.

Engineering Workers' Wages

The C.S.E.U. executive decided at a meeting in York on December 11 to call a conference of all the unions affiliated to the Confederation to consider what action should be taken after rejection of the claim for a fifteen per cent increase in rates of pay of engineering workers.

Restriction of piece work and a ban on overtime are some of the measures proposed by affiliated unions in furtherance of their wage claims.

Contracts & Tenders

British Railways, North Eastern Region, have placed a contract with Sangwin Limited, Hull, for remedial measures to slip in cutting on the up side between Hunmanby and Speeton, Scarborough branch.

British Railways, North Eastern Region, have placed contracts as under:—

Reorganisation of axlebox shop, Shildon Works

Rockweld Limited, Croydon: multi-operator welding plant

B. & S. Massey Limited, Manchester, 11: forging hammers

Wilkins & Mitchell Limited, Darlaston: forgemaster press, type "N"

Webster & Bennett Limited, Coventry: 36-in. boring and turning mill, Darlington Locomotive Works

It is understood that the following are the totals of steam locomotives ordered by the Indian Government under its 1954-55 programme:—

Hitachi Seisakusho K.K., Tokyo, Japan: 100 "WG" class

Krauss Maffei A.G., Munich: 150 "YP" class

Henschel & Sohn, G.m.b.H., Cassel: 60 "WG" class

Fried. Krupp Lokomotivfabrik, Essen: 40 "WG" class

Wiener Lokomotivfabrik, Vienna: 60 "WG" class

Ansaldo S.A., Genoa: 50 "WG" class

The Special Register Information Service, Board of Trade, Export Services Branch, reports that the British Embassy at Brussels has notified a call for tenders issued by the Belgian National Railways for:—

Lot I

58 shunt dynamos 75-105 V. 40 A. intended to be driven by the transmission gear in Lot 3

Lot II

58 regulation boxes for the dynamos in Lot I

Lot III

58 sets of driving gear

Also, drawings on cloth, overall drawings, and detailed drawings and lists of all constituent parts, 60 copies of instructions for dismantling and maintenance: (40 in French and 20 in Flemish).

The closing date for receipt of tenders is December 23. Tenders should be sent to the Direction du Materiel et des Achats, S.N.C.B., Bureau, 26-41, Section 4, 17, rue de Louvain, Brussels. A copy of the tender document (in French) is available for loan to United Kingdom firms on application to the Branch, Lacon House, Theobalds Road, W.C.1.

The Special Register Information Service, Board of Trade, Export Services Branch states that the Commercial Department of the British Embassy at Caracas has reported that in connection with railway development plans in Venezuela, the American firm of Van Sickle & Associates, consulting engineers, of 442, Broadway, Denver, Colorado, U.S.A., is working on plans for a railway intended for ore extraction. They would be glad to hear from interested United Kingdom firms able to quote for:—

(*a*) Five diesel-electric locomotives of about 500-600 h.p.

(*b*) Ten diesel-electric locomotives of about 1200-1500 h.p.

(*c*) Iron-ore trains of 10,000 tons net, made up of 100-ton ore wagons, standard gauge

(*d*) 1000 100-ton ore wagons of the link-belt rotary car dumper type

Quotations should be sent, calculated in U.S. dollars, to Messrs. Van Sickle & Associates, at the address given above, marked "For the attention of Mr. Paul Van Sickle." United Kingdom Manufacturers who decide to submit quotations are asked to inform the Branch, under reference ESB/11116/53, at Lacon House, Theobalds Road, London, W.C.1.

Notes and News

Vacancy for Assistant Traffic Superintendent.—An assistant traffic superintendent is required by the Nigerian Government Railway for tour of 12 to 24 months in the first instance. See Official Notices on page 699.

Stores Inspector Required.—Applications are invited for the post of stores superintendent required by the Nigerian Government Railway for tour of 12 to 24 months in the first instance. See Official Notices on page 699.

Vacancy on London Transport Staff.—London Transport require an assistant, technical investigator section, to collate test data and technical information relating to signals and civil engineering work and to assist with civil engineering developments. See Official Notices on page 699.

Resident Engineer Required.—Applications are invited for the post of resident engineer to take charge of large railway tunnel contract involving use of shields in clay together with earthworks, bridgeworks and drainage. Previous tunnelling experience essential. See Official Notices on page 699.

Pre-1900 Southern Locomotives.—The editorial note on page 619 of our December 4 issue may give the impression, through an error, that timings over the South Eastern and London Chatham & Dover Railways in 1888 were shown in the L.S.W.R. timetables; the latter dealt only with that company's trains, the other runs referred to being shown in the tables of the railways concerned.

College of Production Technology.—The touring programme of the School of Materials Handling for the first three months of 1954 has been announced. A number of towns and cities will be visited with a two- full-day, eight-lecture course on "Materials Handling." The titles of two of the lectures are:—"Introduction to materials handling" and "Basic equipment—trucks and pallets." The lectures will commence at Liverpool, including the Isle of Man, on January 7 and 8, 1954.

British Railways Christmas Arrangements.—In England and Wales British Railways will run an augmented weekday service on Christmas Eve. On Christmas Day there will be a Sunday service adjusted as required (on Southern Region suburban lines an hourly service until 1 p.m. and two-hourly service after) and on Boxing Day a modified Sunday service. On Sunday, December 27 the normal Sunday service will be augmented, and on Monday, December 28 the weekday service altered and augmented. Early morning return tickets, shift workers' tickets, and

day return tickets will be issued in the usual way. Where cheap day tickets and "winter" cheap tickets are normally issued on Fridays and Saturdays they will be issued on Christmas Day and Boxing Day and be available by any train. In Scotland normal services will operate during the Christmas holiday, but there will be additional trains to and from England.

Christmas Arrangements, Eastern and North Eastern Regions.—During the Christmas Holiday period this year 428 additional main line trains will be run in the Eastern Region. A Sunday service, with certain adjustments, will operate on Christmas Day and Boxing Day. There will be 407 relief trains running in the North Eastern Region. Restaurant facilities will be available on 100 of them and cafeteria cars on a number of others.

Paris Intercontinental Transportation Club.—The advent of the New Year will be celebrated at the Intercontinental Transportation Club, 11 Rue de Milan, Paris, 11e., on December 31 in the customary manner. The cost of tickets, including champagne supper is 1,500 fr. per person. The club has enjoyed the services since November last of one of the leading chefs of the Cie Internationale des Wagon-Lits. Membership now is 1,100. From January 1 until June 1 the club premises will be open on Saturdays as on other weekdays. It is hoped during the coming year to organise discussions and meetings on technical subjects and topics of general interest, for which purposes a number of prominent personalities are being approached.

Southern Region Christmas Services.—On Christmas Eve the Southern Region will run nearly 100 additional main line trains from London. The "Atlantic Coast Express" from Waterloo to Ilfracombe will run in three portions, the 3 p.m. and 6 p.m. Waterloo to West of England services in four portions and many Bournemouth trains will run in four or five portions. In all over 200 extra trains will run during the holiday period. On Christmas Day suburban trains will run at hourly intervals until 1 p.m., and thereafter at two-hourly intervals. On both Christmas Day and Boxing Day the "Bournemouth Belle" and "Brighton Belle" will not run. The 1 p.m. "Golden Arrow" all-Pullman service to Paris, and the 10 a.m. service from Victoria via Dover-Calais will run as usual on Christmas Day. The Newhaven-Dieppe, Dover-Dunkirk "Night Ferry" and the Southampton-Channel Isles services will not operate on Christmas Day. The Southampton-Le Havre services will not run on Christmas Day and Boxing Day.

English Electric Co. Ltd.: Stock Redemption.—The directors of the English Electric Co. Ltd. announce that £130,300 of 4½ per cent debenture stock, 1972-77, has been drawn for redemption at par on February 1. This will reduce the amount of the stock outstanding to £5,302,382.

London Midland Region Christmas Arrangements.—The London Midland Region will run 712 extra main line expresses to and from the main centres between December 22 and 28, providing some 300,000 additional seats. To and from Euston there will be 213 extra trains and to and from St. Pancras 112.

Safe Driving Awards to Eastern Region Motor Drivers.—In connection with the Safe Driving Competition (1952), organised under the ægis of the Royal Society for the Prevention of Accidents, awards for 15 years or more safe driving were presented to 125 London motor drivers of British Railways, Eastern Region, by Mr. C. K. Bird, Chief Regional Manager, at Liverpool Street Station, on December 5. A number of Headquarters and District Officers of the Region were also present at the ceremony.

Turner & Newall Limited: Acquisition of New Shares.—Negotiations for a controlling interest in Porter's Cement Industries (Rhodesia) Limited, have resulted in firm offers being made by Turner & Newall Limited for the 400,000 ordinary shares of 5s. each, and for the minority interest in Porter's Cement Industries (Bulawayo) Limited, comprising 135,000 ordinary shares of £1 each. The basis of exchange will be one Turner & Newall Limited, ordinary share of £1, fully paid, for each two shares of the Rhodesia Companies. The Turner & Newall Limited, ordinary shares will, as from the date of issue, rank pari passu with the existing issued ordinary stock of the company and will accordingly rank for the final dividend which will normally be paid in January, 1954, in respect of the year to September 30, 1953. If all the ordinary shareholders of the Rhodesia Companies accept the offer, it will be necessary for Turner & Newall Limited, to issue 267,500 ordinary shares of £1 each, credited as fully paid. An offer has also been made to acquire the 200,000 7 per cent cumulative preference shares of 5s. each of Porter's Cement Industries (Rhodesia) Limited, at a price of 6s. each, payable in cash.

Bridge Replacement at Parsons Green, London Transport.—On December 6 a 73-year-old wrought iron bridge carrying the District Line of London Transport at Parsons Green was replaced by a new 57-ft. 180-ton span. The old bridge was rolled out and the new one rolled in in about 16 hr.

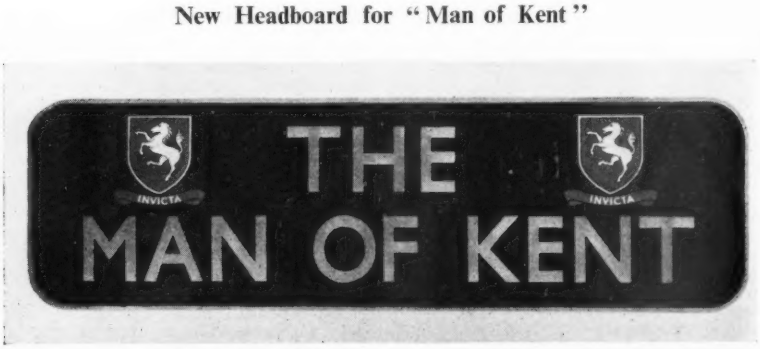
Western Region Christmas Services.—The Western Region will run more than 340 special long-distance trains for holiday travellers between December 23, and December 28. Usual services from Paddington will be augumented by 58 special trains on December 23 and 24, when 40 additional trains will also bring holiday travellers into Paddington. Over 70 relief trains will run on cross-country routes. Existing facilities for the reservation of seats on certain trains will apply during the holiday period, and will also be extended to cover certain additional trains. Advertised services will operate between Fishguard and Southern Ireland and between Weymouth and the Channel Islands, with some exceptions.

Increased Profits for Thos. W. Ward Limited.—At the fiftieth annual general meeting, held on November 20, 1953, the directors of Thos. W. Ward Limited recommended a final dividend of 15 per cent less tax, on the ordinary share capital of the company, making, with the interim dividend of 5 per cent, less tax, already paid, 20 per cent less tax, for the year ended June 30, 1953. In addition it was proposed to pay a bonus of 2½ per cent on the ordinary employees shares, out of capital profits, not subject to Income tax, to mark the 75th Anniversary of the founding of the business and the 50th annual general meeting. A Jubilee Bonus will also be paid to the company's staff and workpeople.

Opening of New Bonallack Works at Basildon.—The new Nevenden Works at Basildon, Essex, of Bonallack & Sons Ltd., commercial vehicle body builders, was opened on Friday last by Mr. Alan Lennox-Boyd, Minister of Transport & Civil Aviation. The new plant, one of the largest of its kind in this country, has been built on the Basildon Trading Estate and is specially designed for manufacture of all-metal, light-alloy commercial vehicle bodies. Features incorporated in the layout include individual spray booths, which are separated from the main factory each being equipped with heating and air-conditioning to permit painting of vehicles in ideal conditions. The new works will be capable of doubling the firm's output of all-metal light-alloy commercial vehicles, including many exports to both the sterling and hard currency areas.

Birmid Industries Limited.—The group trading profits of Birmid Industries Limited for the year ended July, 31, 1953, amounted to £1,842,752 (against £2,743,907 for the preceding year) and the net profit was £550,987 (£961,234 after all charges. To the profit was added surplus tax provisions of £72,271 (£2,253). The board proposes a dividend of 10 per cent, as for last year, plus a bonus of 2½ per cent (1¼ per cent). The consolidated balance-sheet shows that stock and tools have been re-

New Headboard for "Man of Kent"



An addition to the range of Southern Region headboards described in our September 4 issue produced at the request of the Men of Kent and Kentish Men Association. The standard design now incorporates the county motif "Invicta"

OFFICIAL NOTICES

The engagement of persons answering Situations Vacant advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 *inclusive or a woman aged* 18-59 *inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order,* 1952.

GUAQUI LA PAZ RAILWAY. Assistant accountant. Qualifications: Man who has passed intermediate examination of recognised accountancy body preferred. Knowledge of railway accounts an advantage. Preferably single between 28/35 years of age. Apply SECRETARY OF THE PERUVIAN CORPORATION, 144, Leadenhall Street, London, E.C.3.

RESIDENT ENGINEER required to take charge of large railway tunnel contract involving use of shields in clay together with earthworks, bridgeworks, drainage, etc. Previous tunnelling experience essential. Position to be taken up February, 1954, and will terminate on completion of works. Apply in writing giving full particulars of age, experience, qualifications and salary required to Civil Engineer, British Railways, Eastern Region, King's Cross Station, London, N.1.

DRAUGHTSMEN, age under 30, required by British Railways, in London. Must have completed National Service and have had Workshop training experience in light Electrical and Mechanical designs desirable. Ordinary National Certificate. Certain Residential and other travelling facilities. Superannuation scheme. Apply in writing only, stating experience, to Signal & Telecommunications Engineer, British Railways, London Midland Region, Euston House, Eversholt Street, London, N.W.1.

STORES INSPECTOR required by NIGERIAN GOVERNMENT RAILWAY for tour of 12/24 months either (a) with prospect of pensionable employment at salary, etc., of £1,500 a year or (b) on temporary terms at salary, etc., of £1,776 a year plus gratuity at rate of £150 a year. Outfit allowance up to £60. Free passages for officer and wife. Assistance towards cost of children's passages or grant up to £150 annually for maintenance in U.K. Liberal leave on full salary. Candidates should have wide experience of Railway Stores methods, stock control, mechanical and engineering materials, indenting claims and mechanical accounting. Applicants now serving with British Railways are eligible for secondment and should apply through their local officers. Write to the CROWN AGENTS, 4, Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote M3B/33995/RA.

BOUND VOLUMES.—We can arrange for readers' copies to be bound in full cloth at a charge of 25*s.* per volume, post free. Send your copies to the SUBSCRIPTION DEPARTMENT, Tothill Press Limited, 33, Tothill Street, London, S.W.1.

NOTICE

CUSTOMS REQUIREMENTS

TRAFFIC BETWEEN GREAT BRITAIN AND THE REPUBLIC OF IRELAND

(Merchandise and Live Stock by Goods and Passenger Services)

The British and Irish Railway Undertakings and Cross Channel Shipping Companies hereby give notice that the Scales of Charges for Customs Clearance services on traffic between places in Great Britain and places in the Republic of Ireland will be increased by 20 per cent. or thereabouts on and from January 1, 1954. (Details will be supplied on application.)

WANTED URGENTLY IN INDIA Demonstrator Instructor for training of apprentices in Technical School and Workshops at Chittaranjan Locomotive Works, West Bengal. Should be able to give practical demonstration in the School Workshop and to lecture clearly on practical elementary engineering in general, correct use of hand tools, and understanding of all machinery processes. Applicants should have some or all of the following: (*a*) apprenticeship and practical experience of mechanical engineering, (*b*) equivalent of Higher National Certificate, (*c*) experience in teaching mechanical engineering and ability to compile curriculum for their training, and (*d*) locomotive building or repair experience, although this is not essential. Salary: MARRIED—£900 p.a. (taxable) plus tax free allowance of £1,025 p.a. with additional allowances for children. SINGLE—£900 p.a. (taxable) plus free tax allowance of £635 p.a. Free furnished accommodation, free medical expenses, free first class return passages. Kit allowance. Contract for two years with possible extension. Application forms obtainable from Commonwealth Relations Office, Room M.S., 41, Downing Street, London, S.W.1.

ASSISTANT TRAFFIC SUPERINTENDENT required by NIGERIAN GOVERNMENT RAILWAY for tour of 12/24 months either (a) with prospect of pensionable employment at salary, etc., in scale £750 rising to £1,480 a year or (b) on temporary terms at salary, etc., in scale £807 rising to £1,631 a year plus gratuity at rate of £100 or £150 a year. Commencing salary according to experience. Outfit allowance up to £60. Free passages for officer and wife. Assistance towards cost of children's passages or grant up to £150 annually for maintenance in U.K. Liberal leave on full salary. Candidates must have thorough training in all branches of railway operating and commercial work, railway law and economics, a good knowledge of accounts and ability to handle extensive correspondence and control staff. Write to the CROWN AGENTS, 4, Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote M3B/33566/RA. Applicants serving with British Railways are eligible for secondment and should apply through their local officers.

INTERNATIONAL RAILWAY ASSOCIATIONS. Notes on the work of the various associations concerned with International traffic, principally on the European Continent. 2*s.* By post 2*s.* 2*d.* *The Railway Gazette,* 33, Tothill Street, London, S.W.1.

WANTED URGENTLY IN INDIA for modern locomotive works at Chittaranjan, West Bengal, experienced RATEFIXERS for (*a*) boiler shop, (*b*) fitting and erecting shop, (*c*) foundry and (*d*) smithy and forge, and MACHINE TOOL DEMONSTRATORS for (*a*) heavy section, (*b*) light machine shop, and (*c*) grinding machines. Applicants must have wide practical knowledge of their trades. Locomotive experience preferable but not essential. Salary: MARRIED—£750 p.a. (taxable) plus free allowance of £850 p.a. with additional allowances for children. SINGLE—£750 p.a. (taxable) plus tax free allowance of £500 p.a. Free furnished accommodation, free medical expenses, free first-class return passages. Kit allowance. Contract for two years with possible extension. Further details with application forms obtainable from Commonwealth Relations Office, Room M.S., 41, Downing Street, London, S.W.1.

LONDON TRANSPORT require assistant, Technical Investigation section, to collate test data and technical information relating to signals and civil engineering work and to assist with civil engineering developments. Young graduates seeking first employment considered. Salary £264 at 18 rising to £579 subject to age and satisfactory service, with additional payments for certain recognised qualifications: medical exam.: contributory superannuation scheme after probation. Applications within 14 days to Staff Officer (F/EV 262), LONDON TRANSPORT, 55, Broadway, S.W.1. For acknowledgment enclose addressed envelope.

WELDING ENGINEER REQUIRED URGENTLY IN INDIA for modern locomotive workshops at Chittaranjan, West Bengal. Must be practical expert in modern welding technique and be proficient in all branches of welding, including the use of automatic welding machines. Must also be prepared to give instruction and practical demonstration to welders in workshops and to apprentices in Works' Technical Training School. Salary: MARRIED—£900 p.a. (taxable) plus tax free allowance of £1,025 p.a. with additional allowances for children. SINGLE—£900 p.a. (taxable) plus tax free allowance of £635 p.a. Free furnished accommodation, free medical expenses, free first class return passages. Kit allowance. Contract for two years with possible extension. Application forms obtainable from Commonwealth Relations Office, Room M.S., 41, Downing Street, London, S.W.1.

DRAUGHTSMEN, junior, with some experience in the preparation of engineering drawings for reproduction. Good lettering essential. London area. Five-day week. Write, stating age, experience and salary required, to Box 2, *The Railway Gazette,* 33, Tothill Street, London, S.W.1.

N.E.R. HISTORY.—Twenty-Five Years of the North Eastern Railway, 1898-1922. By R. Bell, C.B.E., Assistant General Manager, N.E.R. and L.N.E.R. Companies, 1922-1943. Full cloth. Cr. 8vo. 87 pages. 10*s.* 6*d.*—*The Railway Gazette,* 33 Tothill Street, London, S.W.1

duced to £1,879,004 (from £2,301,160) and debtors to £1,541,086 (from £2,117,021). On the other hand, tax reserve certificates have increased to £1,711,275 (from £1,556,500) and cash to £2,319,902 (from £1,514,503). The excess of current assets over current liabilities was £5,308,785 (£5,212,417).

Modernisation of Signalling at Rickmansworth, Metropolitan Line.—Colour-light signalling is now in use at Rickmansworth on the Metropolitan Line of London Transport. It is controlled from a power-frame of 47 miniature full-stroke type levers in a new signal box on the northbound platform. The changeover, which involved 25 signals and 15 sets of points, was completed in five hours ready for the first train at 6.30 a.m. on the morning of December 6. South of Rickmansworth, the line was already equipped with colour-light signalling.

Proposal to Withdraw Finsbury Park-Alexandra Palace Service.—Because of the loss on working the Finsbury Park-Alexandra Palace line, the British Transport Commission is to submit to the Transport Users' Consultative Committee a proposal to withdraw the present steam services and abandon the project to electrify the line, which formed part of the 1935-40 programme of the London Passenger Transport Board. As postwar conditions have altered the flow of traffic a through electric service to the City cannot be justified. Local authorities in North London are understood to be making representations to the London Area Transport Users' Consultative Committee.

English Electric Co. Ltd.—At the extraordinary general meeting of the English Electric Co. Ltd. on December 3 resolutions to increase the capital of the company to £15,000,000 and authorise the issue to ordinary stockholders of one new fully paid ordinary share for every £2 ordinary stock held at November 9, 1953, were passed.

Cadoxton Station to be Rebuilt.—Cadoxton Station, on the Cardiff-Barry line, of the Western Region, is to be rebuilt. The new building, to the design of the Architect, Western Region, to be erected on the No. 1 up platform, will replace the temporary structure provided after a fire in 1917, and will include the whole of the accommodation required at the station. The premises will be in brick and concrete, with flat projecting canopies at the entrance and over the platform. The accommodation will include a tiled booking hall with passimeter booking offices, a well-lighted waiting room, and offices and staff room. The approach will be enlarged to allow more space for parking cars.

Record Pig Iron and Steel Production.—The output of steel ingots and castings in November was at the record level of 363,000 tons a week, compared with 345,200 tons a week in November, 1952. Pig iron production was also at a record level, averaging 228,500 tons a week against 206,800 tons a week in November of last year.

High-Speed Lifts at Hampstead, London Transport.—Two high-speed automatic lifts are being installed at Hampstead, the deepest tube station in London, and it is hoped to have them in service by Easter. They will reduce the time taken from street level to the platforms by two thirds. Fully automatic in operation and travelling at 800 ft. per min., they are believed to be the fastest lifts in this country. They will take passengers down to the Northern Line platforms 192 ft. below in 18 sec., instead of the 55 sec. taken by the present lifts which date from the opening of the station in 1907. The doors will automatically close after a wait of 12 sec. in slack

periods and up to 42 sec. in the peaks. High-speed lifts are in operation at some heavily-used London Transport stations where escalators cannot be installed because of lack of space, the Hampstead lifts will be 200 to 300 ft. a min. faster than these.

Epping Auto-Shunter.—F. E. Weatherill Limited has been appointed main distributor for Great Britain and all territories overseas for the Epping Auto-Shunter, which was successfully introduced by the manufacturers, Epping Engineers Limited, some six months ago.

Hunslet-Built Diesel Locomotives in Peru.—Our publication "Overseas Railways 1953" illustrates on page 103 a diesel shunting locomotive supplied by the Hunslet Engine Co. Ltd. to the Paita-Piura Railway (Peru). The horsepower of the locomotive is 204 and not 500 as stated in the caption.

Experimental Reduced Rate for Cars to and from Ireland.—As an experiment, freight rates for accompanied motor-cars are to be reduced during April, 1954, on the Irish cross-channel services. Provided not less than two adult saloon fare paying passengers accompany each car in both directions and that the vehicles travel by the same route on both outward and return journeys motor-cars, caravans and four-wheel baggage trailers will be charged single rate and a half for the double journey at owner's risk.

Dissolution of Argentine Section of the Institute of Transport.—The Argentine & River Plate Section of the Institute of Transport, which was founded in 1927 with Sir Arthur Watson as its first Chairman, has been dissolved. The Section built up a membership of over 200 and it had a very successful history up to the time of the taking over of the British-owned railways in the Argentine by the Argentine Government. In association with other British organisations in Buenos Aires, it had its own Headquarters and Library, and it regularly printed its own Proceedings. During the post-war years the membership has been reduced by the departure of former British officials until it fell below 100. Liaison with the members in the River Plate area will be maintained by the appointment of two Honorary Corresponding Members, Mr. C. A. Hadcock (Argentine) and Mr. C. C. Horton (Uruguay).

Peruvian Corporation Limited Results.—The consolidated revenue from railways and steamers of the Peruvian Corporation Limited for the year ended June 30, 1953, amounted to £3,811,759 (against £3,813,146). The surplus for the year, after taking into account £119,264 in respect of fuel oil reserve no longer required, was £392,883 (£375,400). After providing for taxes paid and accrued, debenture service accrued but not paid, and interest on arrears of debenture interest accrued but not paid there was a deficiency of £220,506 (£70,673). The total debit balance carried forward is raised to £2,788,253 (from £2,546,393). Consolidated current assets at the year end totalled £2,648,119 (£2,712,680) and included cash at £1,159,136 (£1,386,217). Current liabilities amounted to £1,159,136 (£1,386,217). Current liabilities amounted to £1,599,699 (£1,388,133). The directors state that with the consent of the Corporation, the Supervision Committee has sanctioned an extension of the scheme of arrangement made between the corporation and its debenture holders for a year up to December 31, 1954.

Forthcoming Meetings

December 21 (*Mon.*).—Institute of Transport, at 80, Portland Place, London, W.1, at 5.45 p.m. Annual general meeting of corporate members.

December 31 (*Thu.*).—National Schoolboys' Own Exhibition at the Royal Horticultural Hall, Westminster, London, S.W.1.

January 4, 1954 (*Mon.*).—Institute of Transport, Berks, Bucks & Oxon Section, at 32, Thorn Street, Reading, at 7 p.m. Talk and film on "The Port of Bristol," by Mr. F. W. Arney.

January 5 (*Tue.*).—Institute of Transport, at 80, Portland Place, W.1, at 6 p.m. Visual aid meeting.

January 6 (*Wed.*).—Locomotive Society of Scotland, at 302, Buchanan Street, Glasgow, C.2, at 7.15 for 7.30 p.m. Paper on "Valves, valve gears, and steam distribution," by Mr. Montague Smith.

January 6 (*Wed.*).—Institute of Metals, at the University, Edgbaston, Birmingham, from 10.30 a.m. to 4.30 p.m. Informal discussion on "Lubricants for metal working operations in the non-ferrous metals industry." Mr. W. J. Thomas will be in the chair.

January 7 (*Thu.*).—British Railways, Western Region, Lecture & Debating Society, in the Headquarters Staff Dining Club, Bishop's Bridge Road, Paddington, W.2, at 5.45 p.m. Paper on "The importance of South Wales area to the Western Region," by Mr. H. H. Swift, South Wales Area Officer.

January 7 (*Thu.*).—British Railways, Southern Region, Lecture & Debating Society, at Chapter House, St. Thomas Street, London Bridge, S.E.1, at 5.45 for 6 p.m. A display of Swiss travel films, by Mr. H. O. Ernst, Swiss Railways.

January 8 (*Fri.*).—The Railway Club, at 57, Fetter Lane, London, E.C.4, at 7 p.m. Paper on "Present-day progress on British Railways," by Mr. D. S. M. Barrie, Vice-President.

Railway Stock Market

The coming holiday has made for contraction of business. British Funds eased and there has been a fair amount of profit-taking in industrial shares following their recent gains. Nevertheless, sentiment has been helped by further dividend increases and market estimates that in the next few months many other companies are likely to pay out a little more in dividends. The policy of very conservative dividends, which has hitherto been followed by many companies since the end of the war, is now being dropped for a more realistic policy, and in future shareholders must be prepared for dividends to fluctuate from year to year, in accordance with the financial results obtained.

An important factor influencing bigger dividends is the many company takeover moves and share bids. These have as their basis the fact that, largely because dividends in recent years have been very small in relation to earnings, the purchase of a controlling interest in a company by buying shares in the market can be very profitable, for control of a company means control of valuable property and other assets which are often carried in the accounts at much below their present value. Many companies have not revalued their property assets since before 1939.

Business in foreign rails has been limited. Probably the main feature has been speculative buying of Dorada ordinary stock up to 64 on renewed talk of takeover possibilities. Though no early move of this kind is apparently expected, it is realised that on a takeover the ordinary stock would have a break-up value much in excess of its current market price. Business around 89½ was shown in Dorada 6 per cent. debentures.

There was rather less business in United of Havana issues. Both the "A" and "B" per cent stocks were quoted at 99½, the 5 per cent second income stock at 41¼ and the consolidated stock at 6½.

Manila Railway "A" debentures changed hands around 85½ and the preference shares around 9s. 1½d., while the 1s. ordinary shares transferred around 4s. 3d.

Australian oil developments brought in speculative demand for Midland of Western Australia Railway stock up to 22, but later there was a reaction to 19; the 4 per cent second mortgage debentures marked 47.

Emu Bay 5 per cent debentures have been dealt in up to 10½ and Nyasaland 3½ per cent debentures at 79¾.

Break-up value estimates continued to draw attention to Barsi Light which marked 126.

In other directions, Nitrate Rails shares were 21s. 3d.

Taltal shares marked 13s. 7½d. and Brazil Rail bonds 6⅜.

Costa Rica ordinary stock was 9½ and Guayaquil & Quito 5 per cent debentures 38½.

Antofagasta ordinary and preference stocks were 8½ and 42½ respectively. Mexican Central "A" debentures strengthened to 83¼. San Paulo ordinary units were 5s.

Canadian Pacifics at $41½ have not held best prices; the 4 per cent preference stock was £70¼ and the 4 per cent. debentures £85½. White Pass, after easing, became firmer at $27¾; the 5 per cent convertible debentures were higher at £99.

Among road transport shares West Riding were 27s., Southdown 30s. and Lancashire Transport 51s. B.E.T. 5s. deferred units were active around 37s. 7½d. on dividend estimates.

The higher wages claims again affected sentiment in the market for engineering shares. A talking point in the City is whether it will be possible to make the next big steel issue, which is expected to be either Stewarts & Lloyds or Lancashire Steel, while United Steel shares are at a discount. The latter, it is thought, may not go to a premium until after the end of January, when they will become fully paid following the final call of 10s. per share which then falls due.

Vickers were down to 48s. 9d., Guest Keen 49s. and Ruston & Hornsby 39s. 6d., while Tube Investments have changed hands around 59s.

Among shares of locomotive builders and engineers, Beyer Peacock were lower at 28s. 6d. and Charles Roberts 5s. shares 17s. 1½d. Hurst Nelson were 42s. 6d., North British Locomotive 12s. and Birmingham Carriage 30s. 7½d. Vulcan Foundry were 22s. 6d., Gloucester Wagon 10s. shares 15s. 9d. and Wagon Repairs 5s. shares 14s. 7½d.